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# NAGAOA

## Mycological Journal of Nagao Institute

## 長尾研究所菌類研究報告 I

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COMMONWEALTH MYCOLOGICAL INSTITUTE
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財團法人 長 尾 研 究 所
Nagao Institute
Kitasinagawa, Tokyo, Japan

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## Preface

By Kinya NAGAO, Chief Committee

Retrospection as to the course of ups and downs the Nagao Institute has fully experienced in its real vocation of scientific researches during these score of years causes me a profound emotion. It was so long ago as in the year 1929, when I first realized of utilization of the waste yeast, or the brewer's grains, people then had simply to throw away as a refuse everywhere, and created at last a **"Wakamoto"** (Rejuvenescent element) out of it, the first of this sort published in Japan, which has since fully occupied my time to call me forth more than ever in being anxious about the studies in utilizable microorganisms then was much behind in this country.

On my inspecting tour of the world during 1936, I felt simply envious at such facilities thoughtfully equipped by various leading nations of the world and was especially impressed in all manner of plans accomplished or under consideration in the Centraalbureau voor Schimmelcultures in Baarn, Netherlands, and, in the year 1940, when the Two-thousand-Six hundredth Anniversary of the Foundation of the Country was celebrated throughout Japan, I decided to donate a fund to create a research institute for utilizable microorganisms together with a function for type culture collection.

Nagao Institute was thus established under guidances of Dr. Kendô Saitô, Prof. emeritus of Osaka University in November the same year, and twelve years have so elapsed in carrying out various research works concerned to utilizable microorganisms to effect them to cure and prevention of diseases and to develop industry in bringing such research works into application in reality.

Untiring in love of learning, the Institute studied also in type-classification and collection of utilizable microbes with unrelenting diligence and has perfected its function to supply on request with any strains of microorganisms to the scientific circle as well as to industrial works extensively. It is the utmost pride and joyance of mine, as the founder of the Institute, that the organization has so grown as to issue a periodical organ and has come forward to introduce itself to the world with such dignified bearing today.

The World War II had been extremely abominable and regretful an event, and we had, however, been still carrying on most humbly and yet so ardently our tasks even amidst the fire of vexed Karma, trusting only in the inherited great love and goodwill of Pasteur to Flemming, as though having faith in ever-shining Light beyond the blackest clouds, and, have indeed reappeared like a Phoenix today.

It was during the month of March, 1944, should we ever forget the day we indulged ourselves with delight of having confirmed of wonderful effect of the compress applied in preventing infections to skin of penicillin samples we produced by culturing specimens of P. 233 and P. 176 discovered among those blue moulds we maintained for the purpose of securing most promising penicillin-producing strains. The dreaded war was in its course of proving the natural retribution, enough cruelly and yet so admonishingly to a degree, and

the thousand and one worries of life have been imposed to the people, among whom were those exposed themselves to severe burns and bruises subjected to urgent aids, and, we have indeed answered the demand just in time too.

My heart is too full for words when I realize that we have at last happened upon a proper ground today after having wended our long way up along a trying steepy path in darkness ever since the year 1940, and have grown capable of participating, as the only civil research function of the sort in this country, the International Organization for Type Culture Collection of Microorganisms in 1950, and are now making a present to the world of our Journal "**NAGAOA**" here.

Nagao Institute has so fortunately been exempted from ravages of the war and its functions in research works as well as the interchange of cultures of microoganisms with those scholars concerned in either Continents, the Old and the New, and is doing its best endeavours most vividly, we are glad to mention.

Utilization of moulds for preparation of alcoholic beverages and seasoning stuffs has long been known among peoples in the Orient and is said special in the Culture of the Nations. This is to remind of our pleasure to foresee if our Journal may be of some avail to the effect of interpretating such Culture in the Orient by informing the world the results observed in various research works in such utilizable moulds in this country, with most humble homage to the scholars concerned of the world in asking for further cordial guidances and aids on this occasion of the first issue of the Journal.

## 卷 頭 之 辭

財團法人長尾研究所設立者
理事長　長 尾 欽 彌

當時世界的に捨て去られて居たビール酵母の利用に着目して、日本に於ける最初の酵母劑「わかもと」を創始し、1929年以來その製造販賣事業を主宰し來つた私は、仕事の關係上特に有用菌學に對しては早くから深い關心を抱懷して居りました。當時我國には此の學問の爲の專門研究機關が皆無の狀態で、之は常に私の遺憾に思つて居つた所であります。

1936年歐米視察旅行の途次、各國の此種施設を見學し、眞に羨望の念に堪えぬものがあり、特にオランダ國バールンの Centraalbureau voor Schimmelcultures の諸施設には深く心を打たれました。

歸朝後、1940年、我國の建國2600年記念祝典が擧行せらるるに當り、私は此を記念する爲の諸事業の一として、基金を寄附して有用菌學研究機關及菌株保存施設たる財團法人長尾研究所を設立せん事を決意し、大阪帝國大學名譽教授理學博士齋藤賢道氏を中心に設立準備を進め、同年十一月開所の運びを見るに至つたのであります。

爾來十有餘年、有用菌學及び此と聯關を有する諸領域の研究、並びに此等の研究と產業との緊密な結合を活動目標の經となし、又各種有用菌類を全面的に檢索蒐集し必要に應じ、學界、產業界一般に頒布し得る態勢の整備をその緯となして、撓みなき歩みを續け來りましたが、今、日本の國際社會復歸を機として、ここに機關誌を發行し、廣く世界に研究の交流を求め得る迄に生長し得ました事は、設立者たる私にとりまして至上の喜びであると申さねばなりません。

第二次世界大戰は人類に對する眞に悲しむべき業火でありましたが、此の業火を貫き、有用菌學の

領域に於て、抗生物質と云う人類の福祉に無限に寄與すべき華が咲き出でました事は、悲しみの中に兎角意氣阻喪せんとした我々を何んなにか勇氣づけて呉れた事でありましよう。

我々は戰爭の悲慘の中にあつて、恰かも黑雲の間隙から流れ出づる一條の光を仰ぎ見る思で、パスツールからフレミングに續く善意に滿ち、眞理愛に燃える偉大なる精神の流れに思を致しつつ、研究勞作を繼續し來りました。

1944年二月、本研究所は不取敢その蒐集保存にかかる青黴屬菌株の中から500種を選定、關係諸領域の學者等に依り構成せられた日本ペニシリン委員會と協力してペニシリン强力生產菌の檢索に當つたのでありますが、此の中から P. 233・P. 176 の該當菌株を發見する事を得、直に此等を培養して製造せられたペニシリンは多くの戰傷者の苦痛の緩和、生命の救助に役立つたのであります。

半分以上焦土と化した東京に於て、燒けただれた患者の皮膚の上にペニシリンガーゼの濕布が行はれ、感染が完全に防止せられる事を確認した時の我々の喜び、此の喜びを今以て我々は忘れる事が出來ません。

自然科學は平和、福祉そして善意の他の何者の侍女でもなく、そして緊密なる國際交流の基盤の上に於てこそ初めて彼女の健全な發達を望み得る事を我々は固く信ずるものであります。

此の意味に於て、本所が去る 1950 年には國際微生物保存機關聯盟に日本民間唯一の研究機關として加盟する事を得、又今日機關誌 NAGAOA を廣く世界の同學諸賢の座右に贈り得るに至つた事は、我々をして恰かも嶮阻な山路を 1940 年以來辿つて初めて往還道路に出で來つた樣な感慨を抱かしめます。

幸いにして當研究所は戰火をも免れ、保存菌株も無事なるを得たのみならず、戰後益々その蒐集の內容に充實を加えつつあり、新舊兩大陸の各研究機關との間の菌株交換も逐次活潑化して參りました。

古來、酒精飮料・調味料の製造に有用菌の一たるカビを利用する事は東亞民族文化に於ける特有の事實でありますが、特に我國は四季の變化に富み又濕度等の關係より、諸大陸に於ては見られぬ珍奇な微生物の存在する事は從來の研究より推定しても明かな所でありましよう。

本機關誌が此等東洋特有の有用菌に關する諸事實の紹介に役立ち、又斯學研究領域に於ける國際交流に寄與する事を得、人類福祉の花園に一本でも多くの花を咲かしむる役割の一端を果す事が出來るならば、本研究所の光榮は之に過ぐるものはありません。

機關誌第一號を廣く世界に贈るに當り、同學諸賢の御支援を衷心懇請して已まぬ次第であります。

# Outline of the Nagao Institute, Foundational Juridical Person.

By K. Kominami
(Director of the Institute)

## 1. Origin and Development of this Institute.

There are very few institutions in the world which identify and collect the various fermentative and pathological microorganisms, conduct researches and at the same time distribute necessary strains instantly to the scientific or industrial field upon their demands.

Of course there was no such institution in the Orient until Mr. Kinya Nagao, the founder of Wakamoto Pharmaceutical Co., Ltd., who had been operating microorganisms pharmaceutical industry since 1929, established this Nagao Institute, foundational Juridical Person, on November, 1940, consulting with Dr. Kendo Saito, Emeritus Professor of Osaka University.

The institute is situated on the hill of Gotenyama, looking towards the Shinagawa Sea in the Bay of Tokyo, as the area of sites of more than 1,600 tsubo (about 1.5 acre) and the area of the main building of over 400 tsubo (about 1,600 square meters).

There are over 2,000 kinds of cultures such as moulds, yeasts, bacteria and actinomycetes collected from Japan and abroad, in the preservation room which is the most important part of this institute.

The researches for mass production of vitamin $B_2$ by the *Eremothecium Ashbyii* were completed in 1942, the next year of the establishment of this institute. This mould produces needle-shaped crystal of vitamin $B_2$ by culture under certain condition.

There was Penicillin Research Committee appointed in this country on February, 1944, after it was reported that the Allied Forces were using penicillin. Three members from this institute joined to the committee and at the same time about 500 strains of *Penicillium* were offered to the Committee. Thus the committee investigated 2,000 strains and discovered 2 strains (P. 176 and P. 233) from this institute. And all penicillin makers in this country had been using the moulds, especially P. 233, which offered by us until the improved moulds were imported from U. S. A. The institute is now pursuing new antibiotic substance.

Our collection has joined the International Federation of Culture Collections

of Microorganisms (IFCC) in 1950. A catalogue of the collection, "List of Cultures, 1950," was issued and supplied to interested persons and institutions.

## 2. Present Status of the Researches.

There are two laboratories, namely, Yabuta's Lab. and Kominam's Lab., in this institute, and they are engaged in collaboration with each other, chiefly in collection, preservation and distribution of cultures, fundamental researches on micro-organisms and their application and microbiological chemistry.

The following is some of the results of these researches:

### 1) Collection of Cultures.

The strains preserved at present were collected by Dr. Kendo Saito, former director and chief research scientist (consultant at present), while he was in the Central Laboratory, South Manchuria Railway Co., Ltd. and in Institute of Fermentation Technology, Faculty of Engineering, Osaka University; besides the above basic collections there were added some cultures isolated in this institute, and others collected from the several institutes and laboratories in Japan and abroad.

According to the "List of cultures preserved" for the year of 1942, 784 cultures were listed, while 1,114 listed on May, 1949, 1,774 on August 9th, 1950, and 2,103 strains on February 19, 1952. There are many other strains not yet identified, and still more increasing at present.

### 2) Preservation of Cultures.

For preservation of cultures we use the method of nutrient agar slants and keep them in the air-conditioned preservation room of below 20°. However, it is feared that here may be induced any change in their morphological character or may happen any physiological variation, we are now studying preservation strength by the application of the lyophile method, under a mineral oil seal and in fertile garden soil.

### 3) Researches on Mould which produce Vitamin $B_2$.

It was reported by Profesor Guilliermond's mycological study that *Eremothecium Ashbyii* produced vitamin $B_2$. But this study was pure mycological one and the quantity of vitamin $B_2$ produced was so little that it was beyond the practical use. Dr. Saito, however, cultured this mould in a certain condition and succeeded in producing much quantity of vitamin $B_2$. This process has been industrialized and the product has been placed in the market in the name of "Wakaflavin."

### 4) Researches on Antibiotic Substances which Microorganisms produce.

In consequence of joining the Penicillin Committee as above stated, we have

been proceeding the researches on antibiotic substances. The chief researches are as follows:

(1) Researches on production of citrinin by *Penicillium citrinum*, (2) Researches on production of coelicolorin by *Streptomyces coelicolor*, (3) Researches on production of streptomycin by *Streptomyces griseus* and on its actinophage, and (4) Researches on antibiotic pigments of *Aspergillus versicolor* etc.

## 流動パラフィンによる菌株保存方法

培養菌株の保存方法には多くの研究があり，特に Lyophile 法，Soil-stock 法は著名である。茲に述べる方法は，既に諸外國で一般細菌に對しては試みられ，絲狀菌に對しても最近米國で試みられているものであるが，筆者等は繼代培養以外の方法にては保存困難な菌株に本方法を試みて，好結果を見て居るので，目下試驗中であるが，その方法の概要を紹介する。

卽ち，常法により試驗管內寒天斜面培地に保存すべき菌株を接種して 25°C に 2 日乃至 1 週間保ち，菌の發育が認められて來たなら更に 15°C の所に移し，完全に發育させる。此の際，25°C に永く置く事は寒天が乾燥し過ぎるので成可く避ける樣にする。完全に發育したならば，殺菌した流動パラフィンを，綿栓を外して流し込み寒天斜面の上端より約 1 cm 上まで滿し，綿栓をして 15°C 以下の所に正置する。

生存試驗を行う時は流動パラフィン層內の菌絲體部分を白金線でかきとり，試驗管內壁で出來るだけパラフィンを流し落し普通の培地に接種してその發育を見る。保存中，パラフィン層內で或程度發育の進む菌もあり，亦，菌によつては色素を溶出してパラフィン層を着色するものもある。

筆者等は，普通の寒天培養では胞子を形成し難い菌株（例. Basidiomycetes）及び，胞子の發芽困難なる菌株（例. *Eremothecium Ashbyii*）等に本方法を試み，其の他變異著しい菌株へも試みて，現在迄の所，永いものでも約 1 ケ年半であり長期保存の結果は未定であるが，殆ど全菌株に生存を認め，特に前記 2 條件に含まれる菌株には適する方法と思はれる。

米國での例によれば（1950），122 株中，2 年後に 2 株の他は生存して居る。

亦，生存して居る場合，普通培地に移植すると繼代培養のものよりも盛な發育を示す事が多く，興味を持たれる點である。（小南，椿　記）

# Enumerations of the Moulds of Japan :
# I. Species of Fungi Imperfecti

By Kiyosi Kominami, Yosio Kobayasi & Keisuke Tubaki

小南清，小林義雄，椿啓介：日本産黴類の研究 I. 不完全菌類の種類

1. **Botryoconis sanguinea** Tubaki sp. nov. (Melanconiaceae)

**Coloniae in cultu in agar-agar wort effusae, floccosae, albae vel sanguineae, reverso concolores. Hyphae breves ramosae, septatae, interdum fasciculatae, 2.5–5.0$\mu$ crassae, primo hyalinae deinde coloratae. Conidiophora ex hyphis aerialibus later aliter oriunda, lageniformes 1-sterigmata, 8–20(40)$\mu$ longa 4–8.5$\mu$ crassa, interdum 2–3 conidia gignentes. Conidia crassolenticluaria, obovata vel elongata longitudine 1-hyalino-fasciata, 5.5–8.0 ×9.5–12.0 (20)$\mu$.**

Colonies on malt agar, floccosely spreading, white to scarlet (Ridgway 1), reverse same colour, producing sanguineous soluble pigment (probably quinone derivative). Hyphae short branched, septate, sometimes fasciculate, 2.5–5.0 (10.0)$\mu$ in diameter, at first hyaline, later producing coloured patches. Conidiophore produced from aerial hyphae as lateral branch, lageniform with 1 sterigma, 8–20(40)×4–8.5$\mu$, sometimes apically bearing a cluster of 2–3 conidia, whole fructification resembling a bunch of grapes. Conidia thick lenticular, obovate or elongate, with a hyaline band around the length, sometimes thick-walled, 5.5–8.0×9.5–12.0(20)$\mu$. Optimum temperature 25°C, no growth at 37°C. pigment production best at 30°C.

51577

— Hab. Isolated from soil, Tiba Prefecture (Tubaki, 1951)

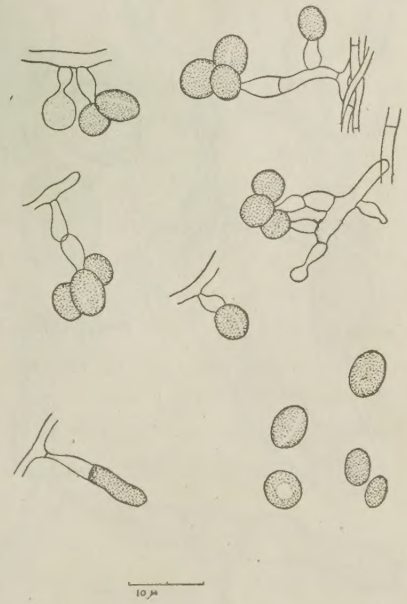


Fig. 1. *Botryoconis sanguinea*

The present species resembles to *Botryoconis pallida* Syd. in spore size, differing, however, in the destitute of the longitudinal hyaline band of conidia and in the peculiar colour production of hyphae.

2. **Oedocephalum coprophilum** Y. Kobayasi sp. nov. (Moniliaceae)

**Coloniae in cultu in agar-agar wort rapide effusae, opacae hygrophanae subtiliter rugosae albidae vel pallide luteo-rubrae, maturo rosae. Hyphae primariae moniliformes e cellulis oblongis, ellipsoideis vel cylindricis 7–12$\mu$ in diam. pallidi roseis vel hyalinis compositae. Hyphae secundariae elongatae septatae dichotomoso vel lateraliter**

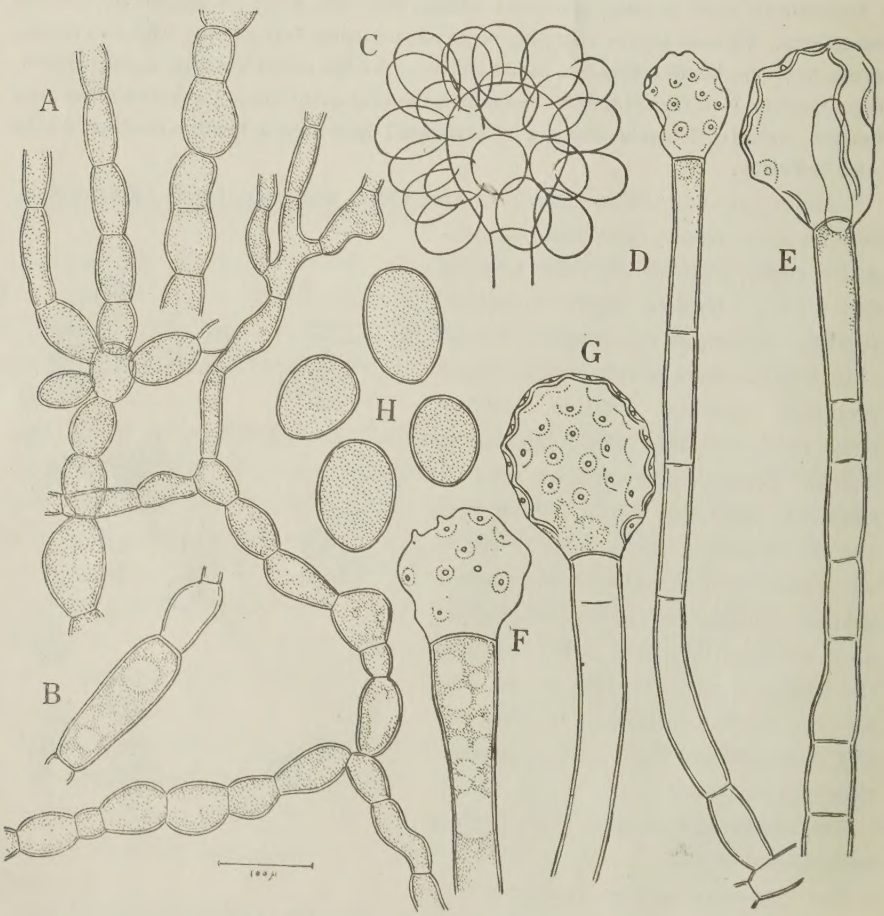


Fig. 2 *Oedocephalum coprophilum*
A. B. Primary hyphae C. Vesicle with conidial cluster D.-G. Various stages of conidiophores H. Conidia (×1300)

**ramosae. Conidiophora erecta simplicia cylindrica aequales vel plus minusve attenuata, continua vel pallidi-rosea, 6–10$\mu$ crassa, 160–320$\mu$ longa; vesiculis, ovoideis, basi truncatis, 25–34×20–23$\mu$, hyalinis, verruculosis; conidiis sessilibus continuis ovoideis, tenuiparietalibus, glabris pallidi-aurantiis 12–20×10–13$\mu$.**

Colonies on malt agar flat spreading, growth rapid, opaque, hygrophanous, finely folded, whitish or pale yellowish red, after maturity of conidia becoming dry and pinkish (Orient Pink). Primary hyphae moniliform, composed of short, catenate cells which are barrel-shaped, ellipsoid or cylindrical, 7–12$\mu$ in diameter, pale pink or almost hyaline; secondary hyphae hyphal-like, septate, dichotomously or laterally branched. Conidiophores erect, simple, straight, cylindrical, equal or somewhat attenuate, continuous or many septate, with foot cells or none, thin-walled, hyaline or pale pink, 6–10$\mu$ in diameter, 160–320$\mu$ long; vesicles septate from conidiophores, ovoid, truncate at base, 25–34×20–23$\mu$, hyaline, covered with dense cluster of conidia; scars distinct, punctate, each with circle furrow, somewhat depressed; conidia sessile continuous, ovoid, thin-walled, smooth, with homogeneous content, pale yellowish pink, 12-20×10–13$\mu$.

Hab. Isolated from dung of Sus leucomystax leucomystax "Inosisi", Mt. Kumotori, Prov. Titibu (Daisuke Simidu, Sept. 20, 1951).

Of the thirty three species of the genus *Oedocephalum* hitherto known, O. *glomerulosum* (Bull.) Sacc. is nearest to the present species. This can be distinguished from the new species in the characters that this grows commonly on the branches of various plants, the hexagonal areolae being found on the surface of mature vesicles, the conidia being elongated (25×12$\mu$) and distinctly subapiculate at their base. Members of this genus are found on the decaying stems, branches, leaves, roots and rarely on flowers of various plants, on mushrooms, dungs of horse, cow, sheep, elephant and lizard, on insects, happenly on papers, on envelops of cheese, and oftenly isolated from air. The colours of these colonies are commonly white, although some others are olivaceous, brown, grey, yellow, and, moreover, three species, *O. roseum* Cooke, *O. aurantiacum* Cooke and *O. glomerulosum* (Bull.) Sacc. are rose-coloured. *O. crystallinum* which is frequently isolated from air has spiny sterigmata on vesicles, hyaline conidia and ochraceous colony.

3. **Mycogone Jaapii** Lindau (Moniliaceae)

in Verh. Bot. Ver. Prov. Brandb. XLVII: 69 (1905); Sac. Syll. Fung. XVIII: 542 (1906); Rabenhorst, Krypt. Fl. Pilze VIII: 387 (1907); Lindau, Krypt. Fl. f. Anf. 2 ed. 112: 184 (1922).

Colonies on Czapek agar, plane, growth rapid, velutinous, white at first, then citron-yellow, pale cinereous yellow, later zonate with reddish brown colour

(Warm Sepia). Hyphae thin-walled, 4–7$\mu$ in diam. moderately septate, shortly beneath the septum somewhat thickened, with many ascending branches, hyaline with numerous distinct globules, with two types of conidia.

Thin-walled conidia-Verticillium Type: conidiophores terminal on hyphae sparingly septate, with several oppositely or alternately arranged branches (phialides), straight, attenuate, 32–54×2–3$\mu$, terminated by a single conidium; conidia oblong, continuous, hyaline or pale yellow with homogeneous contents, 10–18×4–6$\mu$. Thick-walled conidia-Chlamydospore Type: conidiophores lateral, patent or assurgent, short cylindrical, 0–2-septate; conidia two-celled; upper cell spherical or somewhat depressed, base truncate, conspicuously verrucose, very thick-walled, 26–32×22–29$\mu$, pale ochraceous with granulous contents; lower cell smaller, depressed sphaeroid, thin-walled, smooth, 18–21×12–16$\mu$, pale ochraceous, granulose, after detached from conidiophore deformed to half sphaerical or collar-shape at the base of uper cell.

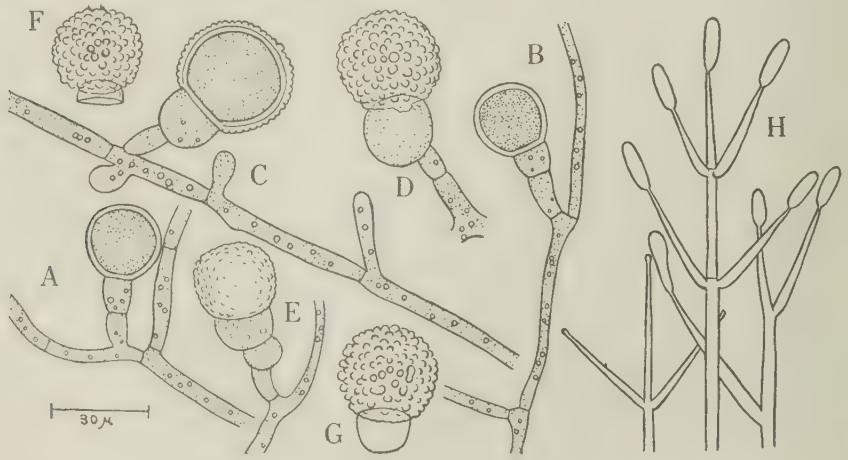


Fig. 3. *Mycogone Jaapii*
A. B, Fertile hyphae with young chlamydospores C. The same with mature chlamydospore representing optical section D-G. The same representing surface views H. Fertile hyphae with *Verticillium* type conidiophores

Hab. Found on the pileus of *Inocybe rimosa* "Asetake", in the grounds of Meiji-Shrine, Tokyo (Kobayasi & Tubaki, Oct. 1951).

Type specimen of this species was found on *Tricholoma terrestre* in Germany. In the present genus are known the following nineteen species and five varieties.

*Mycogone alba.* Letell, *M. anceps* Sacc., *M. aurantiaca* Sacc, *M. cervina* Ditm., var. *papyrogena.* var. *subincarnata* Peck, var. *Theobromae* Sacc., *M. cinerea* Morg., *M. echinulata* Penz. et Sacc., *M. flava* Zimm., *M. Jaapii* Lindau, *M.*

*lindaviana* Jaap, *M. Meliolarium* Pat., *M. ochracea* Boud., *M. perniciosa* Magnus, *M. Pezizae* (Rich.) Sacc., *M. puccinioides* (Preuss) Sacc., *M. rosea* Lk., var. *Jaapiana*, var. *Clavariae*, *M. roseola* Pound. et Clem., *M. rufa* Petch *M. sporotrichi* (Cda.) Sacc,, *M. Ulmariae* Potebnia. Most of these species was isolated from fruitbodies of mushrooms, cup-fungi and other Ascomycetous fungi, few others being found on fruits, stems, papers and human excrements. *M. cerviva*, *M. puccinioides* and *M. rosea* seem to be near the present species, differing, however, *M. cervina* in its small conidia (13–16$\mu$ in diam.), *M. puccinioides* in the much branched hyphae and *M. rosea* in its large conidia (35–40×25$\mu$) in the strict sense. Some mycologists seem to incrude the *M. Jaapii*-type fungus in *M. rosea*-Group.

4. **Curvularia tetramera** (Mckinney) Boedijn (Dematiaceae)

in Bull. Jard. Bot. Buitenzorg ser. 3, XIII : 120–134 (1933) ; Gilman, Soil Fungi p. 303 (1944). Syn. *Helminthosporium tetramera* Mckinney

Colony on malt extract agar broadly spreading with sterile margin, tomentose, olive green (Ridgway IV) to olivaceous black (Ridgway XLVII), reverse same colour. Hyphae branched, septate, hyaline to olive green, sometimes fasciculate and fused at center of colony, 2.5–4.0$\mu$ in diameter. Conidiophore growing as a lateral branch of hypha, thread-like, short, unbranched, septate, 4.5–5.5$\mu$ in diameter, somewhat thick-walled, olive green or medal bronze (Ridgway IV), bearing single or 2–3 verticillate conidia at the end. Conidia ellipsoid or fusiform, sometimes curved, with 2–4 septa, olive green, one of intermediate cells longer and darker than both end cells, 22–41× 10–20$\mu$, rarely bearing the fragment of conidiophore at base. Optimum temperature 30° C, poorly growing at 37°C.

Hab. Isolated from sand of sea-coast, Jôgasima, Kanagawa Prefecture (Tubaki 1951).

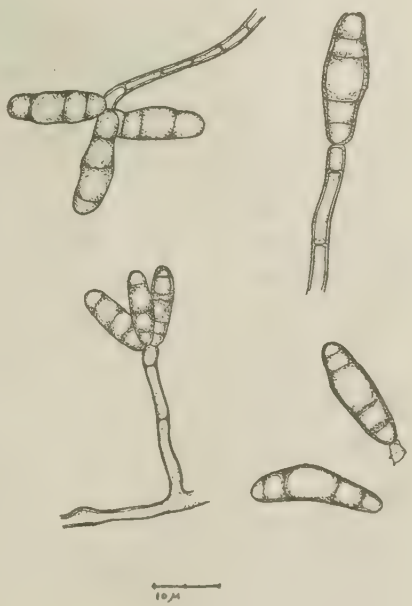


Fig. 4. *Curvularia tetramera*

This species differs from *Curvularia interseminata* (Berk. et Rav.) Gilman in conidial colour.

5. **Haplographium chlorocephalum** (Fres.) Grove (Dematiaceae)

Hardw. Sc. Goss. p. 198 (1885) ; Sacc. Syll. Fung. IV : 306 (1886) ; Rabenhorst, Krypt. Fl. Pilze VIII : (1907) ; Gilman, Soil Fungi p. 295 (1944). Syn. *Periconia chlorocephala* Fres. Beitr. Myk. p. 21 pl. IV fig. 10–15 (1850) ; Sacc. Fungi Ital. pl. 889 (1877).

Colonly on malt extract agar broadly spreading, surface velvety, olive green (Ridgway IV) to olivaceous black (Ridgway LI) with tea green (Ridgway XLVII) conidial portion, reverse black. Hyphae branched, septate, creeping and inconspicuous, hyaline to brown, 2.0–3.0$\mu$ in diameter. Conidiophore erected from hypha, gregarious, cylindrical, usually unbranched, septate, 5.0–9.5$\mu$ in diameter, somewhat thick-walled, snuff brown (Ridgway XXIX) or olive green becoming hyaline towards the apex, forming a penicillus-like buds. The terminal bud (sterigma) packed, cylindrical, 10–13×3.0–5.0$\mu$, hyaline bearing conidia in tangled chains, rarely producing secondary conidiophore. Conidia globose, ellipsoid or somewhat angular, olive green, 3.5–5.5$\mu$ in diameter. Optimum temperature 25°C.

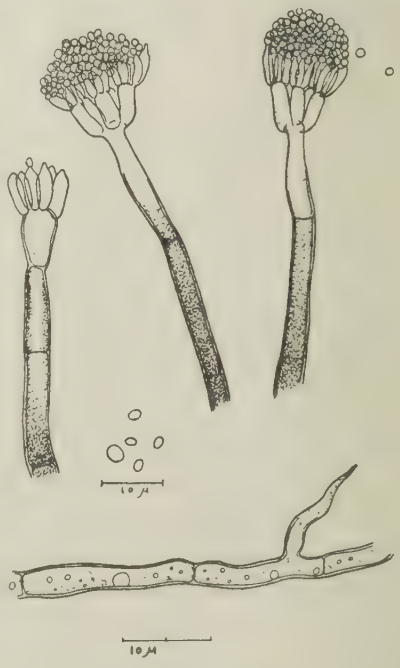


Fig. 5. *Haplographium chlorocepharum*

Hab. Isolated from soil, Yukigaya, Tokyo (Tubaki. 1951).

This species differs from *Haplographium bicolor* Grove in conidial colour.

6. **Nigrospora sphaerica** (Sacc.) Mason (Dematiaceae)

in Trans. Brit. Mycol. Soc. XII : 152–165 (1927) ; Gilman, Soil Fungi p. 293 (1944) Syn. *Trichosporium sphaericum* Sacc. Mich. II : 579 (1881) et Syll. Fung. IV : 293 (1889).

Colony on malt extract agar floccose wooly, dusky green gray (Ridgway LII) ; reverse fuscous black (Ridgway XLVI). Hyphae branched, creeping,

septate, fasciculate and fused, dusky olive green (Ridgway XLI). Conidiophore produced from aerial hyphae as lateral or ultimate branch, jar shaped, short, unbranched, 28–10×4.0–9.0$\mu$, hyaline or pale green, bearing a single conidia. Conidia subsphaerical, 12–17$\mu$ in diameter, black. Optimum temperature 25°C.

Hab. Isolated from air in Nagao Institute, Tokyo (Tubaki, 1951)

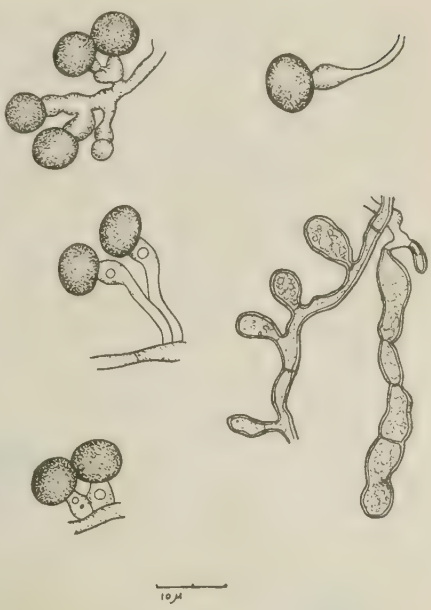


Fig. 6. *Nigrospora sphaerica*

7. **Stachylidium bicolor** Link
(Dematiaceae)

Obs. Myco. I: 13 (1809) Nees. Syst. Pilze p. 47 pl. IV fig. 56 (1816); Sacc. Fungi Ital. pl. 50 (1877) et Syll. Fung. IV: 331 (1886); Rabenhorst, Krypt. Fl. Pilze VIII: 743 (1907); Lindau, Krypt. Fl. f. Anf. 2 ed. II 2: 184 (1922). Syn. *Acremonium bicolor* Bonord. Handb. Mykol. p. 92 (1851).

Colony on malt extract agar floccosely spreading, white to dusky olive green (Ridgway XLI), elevated at central area, reverse same colour. Hyphae branched, septate, hyaline, verticillate, 3.0–4.5$\mu$ in diameter, tapering to apex, olive green, becoming hyaline towards apex. Fertile branch aciculate, 10–35×2.5–3.0$\mu$, bearing conidia in mucillaginous mass. Conidia ovoid, ellipsoid or pyriform, pale green, 3.0–5.5×2.0–4.0$\mu$, sometimes attaining 6.5$\mu$ long. Optimum temperature 25°C.

Hab. Isolated from surface of the rind of Banana (Tubaki, 1950).

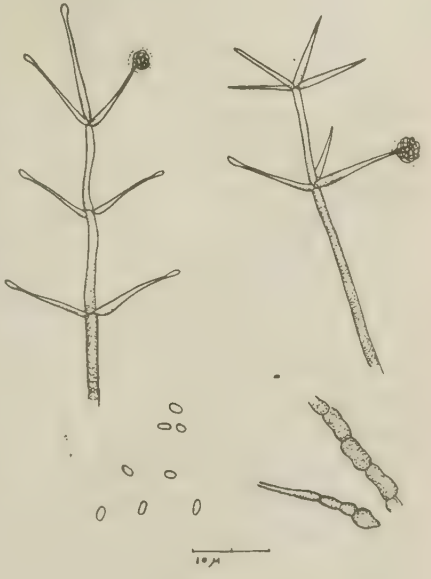


Fig. 7. *Stachylidium bicolor*

# Enumerations of the Moulds of Japan: II. Species of Mucorales

By Kiyosi Kominami, Yosio Kobayasi & Keisuke Tubaki
小南清，小林義雄，椿啓介： 日本産黴類の研究 II. ムコール目の種類

8. **Mucor Ramannianus** Möller var. **angulisporus** Naumov, ex Zycha, in Krypt. Fl. Mark Brandenburg VIa Pilze II p. 58 fig. 15 (1935).

Syn. *Mucor angulisporus* Naumov, in Encyclp. Mycol. IX Clés Mucorinées P. 34 (1939).

Colony on malt extract agar glowing to a thick cottony felt with a height of 2 mm, at first white, then becoming "Livid Brown" to "Russet Vinaceous." Sporangiophores usually simple, rarely septate below the columella, 2–5.5$\mu$ in diameter. Sporangia spherical with deliquescent wall, 20–40$\mu$ in diameter, reddish colored. Columella globose, with a collar, 9.5–15$\mu$ in diameter, hyaline. Sporangiospores minute, irregular in shape, polyhedral, 2–4$\mu$ in diameter, pale pink coloured. Chlamydospores numerous, terminal or intercalar to submerged hyphae, various in size. Zygospores not observed. Optimum temperature 30°C. Optimum PH 4.5, only growing as yeast-type colony at PH 2.3. On synthetic agar scarcely growing, only submerged hyphae produced.

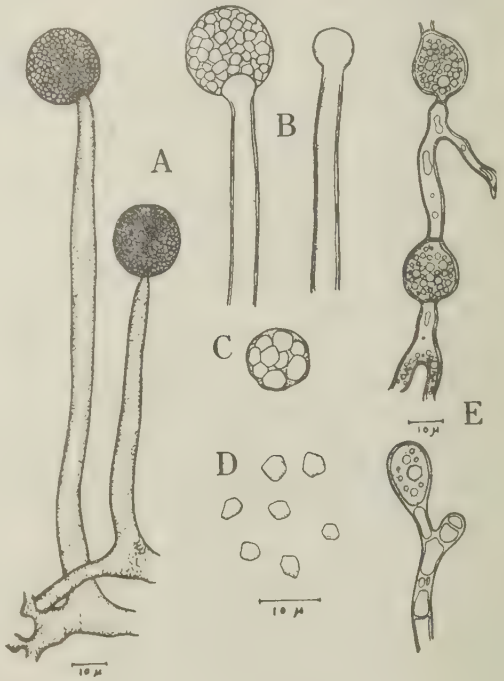


Fig. 8. *Mucor Ramannianus* var. *angulisporus*
A. Habitat B. Sporangium d. Columellae C. Sporangiospores in Sporangium D. Sporangiospores E. Chlamydospores on hyphae

Hab. Isolated from soil of Koisikawa Botanical Garden, Tokyo (Kominami, 1940).

This variety seems to be very near the typical species in every respects,

differing, however, only in spore shape. This fungus including the typical species resembles rather to *Mortierella pusilla* var. *vinacea* than other members of *Mucor* in the colour of colony, appearance and spore size, except for the presence of columella. Eventually, *Mucor Ramannianus* series had been taken for *Mortierella*. If the pyrimidine compounds are added (0.2 mg/100 cc) to synthetic agar, typical colony is produced. Probably this compounds may be utilized as the source of growth factor (Thiamin) of this mould, as already pointed out by Schopfer (1938).

9. **Mucor albo-ater** Naumov., in Extrait du Journal "Materiaux paur la Mycologie et la Phytopathologie de la Russie." p. 4, 1915; Zycha in Krypt. Fl. Mark Brandenburg VIa Pilze II p. 85 fig. 26 (1935).

Syn. *Mucor coprophilus* Povah, in Bull. Torrey Bot. Cl. XLIV p. 297 (1917).

Colony on malt extract agar growing dense, turf to a height of 2–3 cm, at first white, becoming "Light Grayish Olive." Reverse of colony "Deep Chrome." Sporangiophores erect, simple or monopodial-cymosely branched, 20–85$\mu$ in diameter, hyaline or with yellowish tint. Sporangia spherical with deliquescent wall, smooth or spinulate, 150–250$\mu$ in diameter, white to almost black. Columella cylindrical, ovoid or pyriform, 100–160×70–110$\mu$, pale brown, sometimes containing orange-coloured globules. Sporangiospores irregular in shape, ovoid, globose or ellipsoid, 5–16$\mu$ in diameter. Yellow globules produced in submerged hyphae. Zygospores not observed.

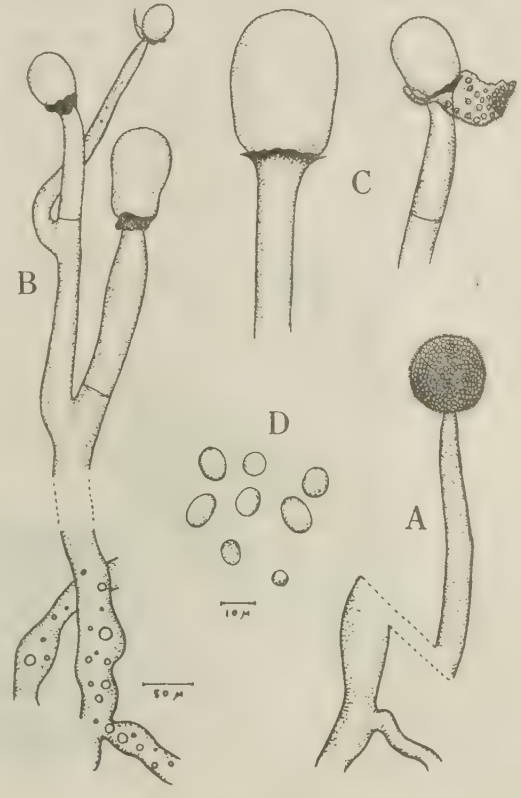


Fig. 9. *Mucor albo-ater*
A. Sporangium B, C. The same sporangia after maturity
D. Sporagiospores

Hab. Isolated from Lion dung, Ueno Zoological Garden (Kominami, 1950).

This species resembles to *Mucor Mucedo* in appearance of colony, sizes of sporangiophores and sporangia, but differs in having more shorter spores and paler colonies than the latter.

10. **Mucor hiemalis** Wehmer, in Ann. Mycol. I p. 36 fig. 1–9 (1903); Lendner, Mucorinées Suisse p. 65 fig. 22 (1908); Zycha, in Krypt. Fl. Mark Brandenburg VIa Pilze II p. 74 fig. 5, 6, 23, 24 (1935); Naumov in Encyclp. Mycol. IX Clés Mucorinées p. 43, 45 (1939).

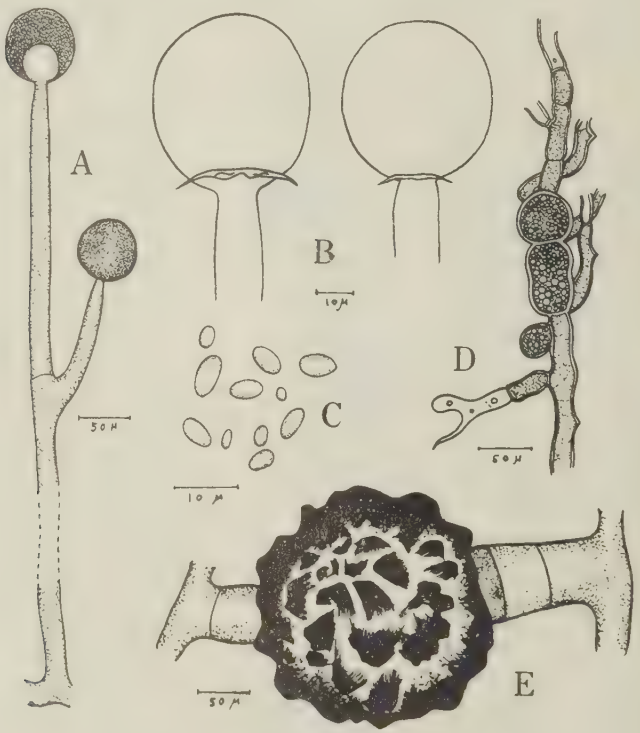


Fig. 10. *Mucor hiemalis*
A. Sporangia B. Sporangia after maturity showing capitate columellae
C. Sporangiospores D. Chlamydospores on hypha E. Zygospore

Colony on malt extract agar glowing dense, erect, turf to a height of 1–2 cm, at first white, becoming "Pale Smoke Gray" or "Deep Chrome," with fairly alcoholic odour. Reverse of colony "Deep Chrome." Sporangiophores at first simple, later sympodially branched, tapering toward apex, 5–14$\mu$ in diameter,

with pale yellow tint. Sporangia spherical with deliquescent wall, smooth or slightly roughened, 50–100$\mu$ in diameter, pale yellow to brownish gray. Columella globose, ovoid or pyriformed with collar at base, 30–45$\mu$ high, hyaline or pale yellow. Sporangiospores variable in shape, globose, ovoid or short elliptical, 2.5–5$\mu$ in diameter, or 3–8 (11)×2.5–5 (8)$\mu$. Chlamydospores and yellowish globules numerous, intercalar, single or catenate in aerial hyphae or in adult submerged hyphae. Heterothallic. Zygospores spherical, verrucose, 50–100$\mu$ in diameter, dark brown or almost black. Suspensors equal, smooth, pale yellow.

Hab. (+) Strain—isolated from snow of Oze-lake side (Y. Kobayasi, May, 1951). (−) Strain—isolated from soil (Kominami, 1942).

The present species resembles to *Mucor varians* Povah in size of sporangia and colony colour, differing, however, in spore size. The latter species is extremely variable in spore shape. In spite of the fact that this is found commonly from various sources, this has not yet been recorded from Japan.

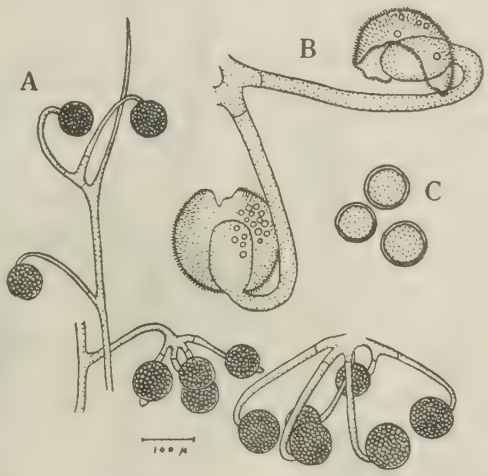


Fig. 11. *Circinella umbellata*
A. Clusters of sporangia B. Two sporangia (×210)
C. Sporangiospores (×1000)

11. **Circinella umbellata** van Tiegh. et Le Monn., in Ann. Sc. Nat. 5 sér. XVII p. 300 pl. XXI fig. 18–23 (1873); Lendner, Mucorinées Suisse p. 104 fig. 37 (1908); Zycha, in Krypt. Fl. Mark Brandenburg VIa Pilze II p. 103 fig. 39, 40, 44 (1935); Naumov, in Enoyclp. Mycol. IX Clés Mucorinées p. 63 (1939).

Syn. *Mucor umbellatus* Schroeter, Schles. Krypt. fl. III 1 p. 206 (1886):

Colonies on malt extract agar rapidly growing, attaining to 2 cm or more in height, at first white, then becoming cinereous-olivaceous (Deep Olive Buff). Fertile hyphae sympodially branched, almost straight with sterile tips, 10–24$\mu$ in diameter, hyaline to pale purplish brown, septate, membrane somewhat thick with scabrous surface. Lateral branches short, commonly 1-septate, curved upward, apically with a drooping cluster of sporangiophores. Sporangiophores 4–10 (15) cymosely arranged or rarely single or paired on lateral

branches, filiformed, 1-septate near the base, circinate, erigens, 7–10$\mu$ in diameter, finely granulous, with one sporangia at the tip. Sporangia erect, spherical, 60–80$\mu$ in diameter, pale ochraceous, finely echinulate, sometimes covered with crystals of calcium-oxalate, wall of which persistent, finally rapturing as to leave a prominent collar at base around columella. Columella ellipsoidal or cylindrical, pale ochraceous, 35–65 × 20–48$\mu$. Sporangiospores numerous, globose or subglobose, 5–6.5$\mu$ in diameter, smooth, pale ochraceous or almost hyaline, somewhat thick walled. Chlamydospores and Zygospores not yet observed.

Hab. Isolated from rabbit dung, in Tôhô University, Tiba Pref. (K. Hisauti, Dec. 1951).

The present species may be distinguished from *C. minor* by the number of sporangia on a lateral branch.

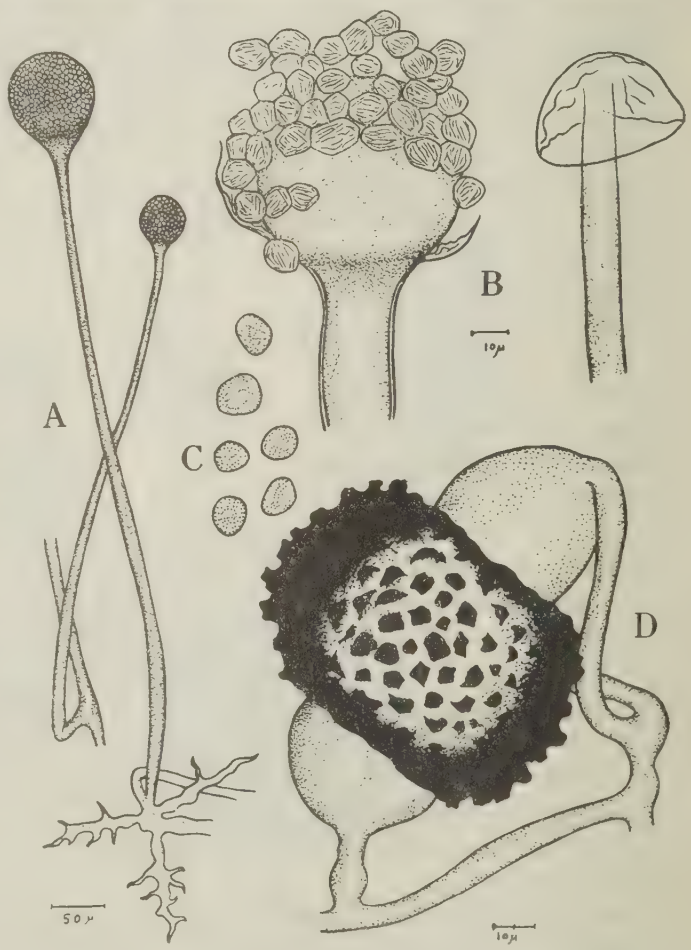


Fig. 12. *Rhizopus sexualis*
A. Habitat B. Sporangia after maturity C. Sporangiospores D. Zygospore

12. **Rhizopus sexualis** (Smith) Callen, in Ann. Bot. N.S. IV No. 16 p. 791–818 (1940).

Syn. *Mucor sexualis* Smith, in Trans. Brit. Mycol. Soc. XXII p. 282 (1939).

Colony on malt extract agar spreading widely to a height of 2–3 mm,

producing numerous zygospores, but aerial hyphae which bear abundant sporangia ascending to the inside of petri dish covers. Stolons arised from strong tufts of dark brown rhizoids, about 10$\mu$ in diameter, and frequently terminating in rhizoids. Sporangiophores arised from any point on aerial hyphae, with or without rhizoids at base, 6–21$\mu$ in diameter, about 50$\mu$ at base, slightly brown at maturity. Sporangia spherical with diffluent wall, smooth or slightly roughened, 50–95$\mu$ in diameter, black coloured. Columella subglobose, without collar, 28–40$\mu$ in diameter, hyaline. Sporangiospores irregular in shape and size, subglobose, ovoid, polyhedral, striated 6.5–18$\mu$ in long axis. Chlamydospores formed in submerged hyphae, 13–20$\mu$ in diameter. Homothallic. Zygospores abundant, formed from bifurcate hyphae, verrucose, 90–170$\mu$ in diameter, with large equal suspensors. Optimum temperature 25°C, no growth at 30°C.

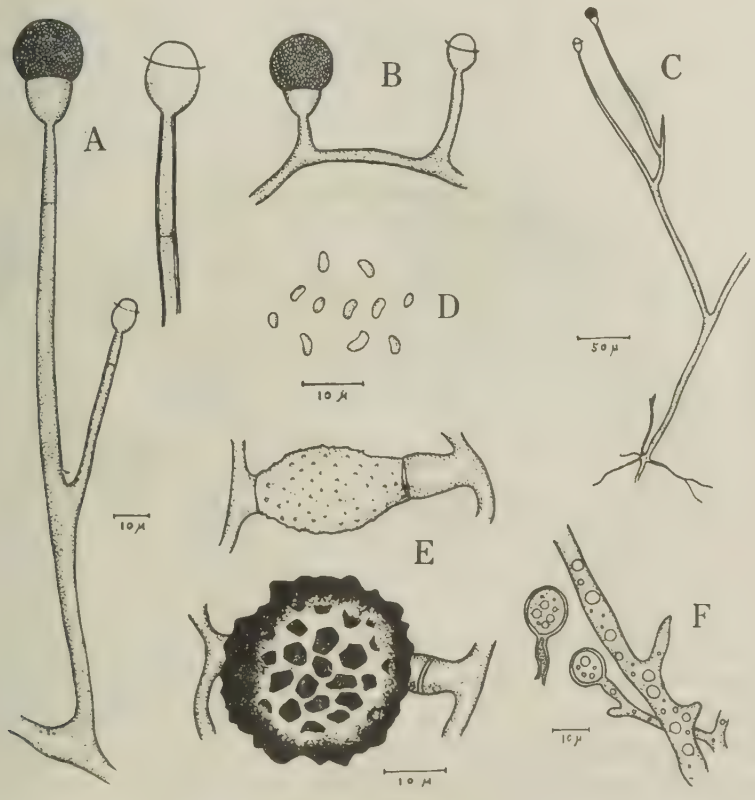


Fig. 13. *Absidia Butleri*
A. B. C. Habitat showing two stages of sporangia D. Sporangiospores E. Zygospores F. Chlamydospores on hyphae.

Hab. Isolated from the cherry (*Prunus yedoensis*), Meiji Shrine, Tokyo (Kominami, 1950).

This species may be easily collected on the cherry in Tokyo. We isolated this at several localities in Tokyo. As this fungus is apt to die at the higher temperature than 30°C, it seems to pass the summer in the stage of zygospores.

13. **Absidia Butleri** Lendner, in Bull. Soc. Bot. Genève 2 sér. XVIII p. 181 fig. 1 (1926); Zycha in Krypt. Fl. Mark Brandenburg VIa Pilze II p. 133 fig. 57 (1935).

Syn. *Absidia subpocu'ata* Paine, in Mycologia XIX p. 251 fig. 1 (1927).

Colony on malt extract agar white to "Pale Gull Gray," floccosely growing to a height of 1—1.5 cm. Sporangiophores monopodially or racemosely branched, septate below the columella, smooth, 23–25$\mu$ in diameter, pale brownish. Columella hemiglobose with same shaped apophyse which is typical character of this species, 4–7×8–9$\mu$. Sporangiospores ovate or spherical to allantoid, 1.5–2.5×3–4$\mu$, hyaline. Chlamydospores numerous, spherical or ovoid, single or catenate on submerged hyphae, 4–6$\mu$ in diameter. Heterothallic. Zygospores spherical, verrucose, 20–40$\mu$ in diameter, brown to almost black. Suspensors unequal 6.5–10$\mu$ in diameter, yellowish brown.

Hab. (+) Strain—isolated from soil, Meiji Shrine, Tokyo (Kominami, 1942). (−) Strain—isolated from soil, Tiba Pref. (1950).

This species is characterized by the hemiglobose columella. The zygospores were found for the first time in Japan.

14. **Pilobolus sphaerosporus** (Grove) Palla, in Oesterr. Bot. Ztschr. L p. 365 (1900) et in Buller, Researches on Fungi VI p. 206 (1934).

Syn. *Pilobolus Kleinii* van Tiegh. var. *sphaerospora* Grove, in Journ. Bact. XXII p. 132 (1882).

On horse dung extract agar, submerged hyphae developing down to 2–3 mm below the surface, at first hyaline, becoming yellowish at maturity. Sporangiophores arise

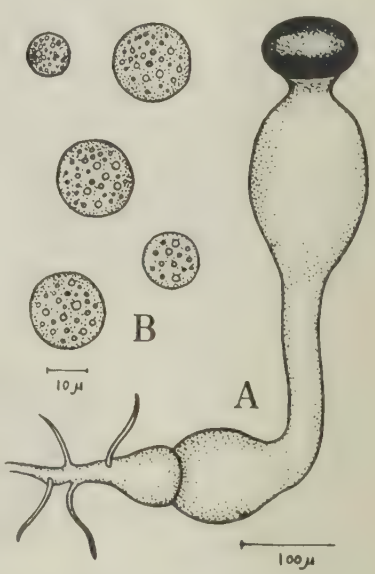


Fig. 14. *Pilobolus sphaerosporus*
A. Habitat B. Sporangiospores

singly from a turnip-shaped trophocyst which is buried in the substratum, apically enlarged to from a prominent, obovate, subsporangial vesicle, 2–3.5 (4.5) mm high, 300–700$\mu$ in diameter. Subsporangical vesicles obovate, 400–800 × 200–600$\mu$, "orange" coloured. Sporangia depressed globose, 250–350 × 150–250$\mu$, "Orange" to almost black, discharged from sporangiophores up to 8 cm or more high. Columella broadly conical, occasionally narrowed near the apex to form a papilla, commonly hyaline, sometimes with a faint blackish tinge. Sporangiospores globose or subglobose, 10–20$\mu$ in diameter, yellow or orange, oftenly with granular contents, with thin and one layered wall. Zygospores not observed.

Hab. Isolated from horse dung, Tokyo (Tubaki, 1950).

This species resembles to *P. Kleinii*, except for the globose and smaller spores.

15. **Cunninghamella homothallica** Kominami et Tubaki sp. nov.

**Coloniae in hordeo-agarico primo albidae dein cinereae (Pale Drab-Gray) atque pallide rufescentes (Pale Purplish Gray). Hyphae aeriales compactae 3–4 cm altae. Hyphae submersae septatae racemoso-ramosae, cellulas magnas vacuolatas intercalariter formantes. Conidiophorae ex hyphis aerialibus erectae, simplices aut monopodialiter ramosae, pallide rubescentes, 6–25$\mu$ crassae apice vesiculatae. Ramuli laterales e partibus apicalibus conidiophorarum oriundi, recti, saepe logiores prae conidiophoris, plerumque septati, 6–10$\mu$ crassi apice vesiculati. Vesiculae terminales globosae, ovoideae vel pyriformes 15–50$\mu$ in diam., superne subtiliter spinulosae; vesiculis lateralibus globosis aut ovoideis 8–18$\mu$ in diam. Conidia vesicularum terminalium globosa vel ellipsoidea echinulata pallide fuscescentia, fugacia, 14–19 × 10–16$\mu$; conidiis vesicularum lateralium, globosis vel ovoideis echinulatis, 13–16 × 10–16$\mu$. Homothallic. Zygosporae globosae 25–70$\mu$ in diam., tuberculatae, atro-brunneae (Argus Brown-Mars Brown). Suspensores equales laeves hyalinae vel fuscescentes 15–30$\mu$ crassae.**

Colony on malt extract agar quickly growing, at first white, becoming grayish white (Pale Drab-Gray) to pale reddish brown (Pale Purplish Gray) Aerial hyphae strictly elevated at height of 3–4 cm. Submerged hyphae septate, racemosely branched, intercalarly forming much vacuolate large cells. Conidiophores erected from aerial hyphae, simple or monopodially branched, with reddish colour, 6–25$\mu$ in diameter, terminating in vesicle. Lateral branches born just below the terminal vesicle, frequently longer than main conidiophores, 6–10$\mu$ in diameter, commonly septate at the branched point, terminating in vesicle. Terminal vesicles globose, ovoid or pyriform, finely spinulate on surface, 15–50$\mu$ in diameter; lateral vesicles globose or ovoid, 8–18$\mu$ in diameter. Conidia on terminal vesicle globose or ellipsoid, echinulate, pale brown, readily

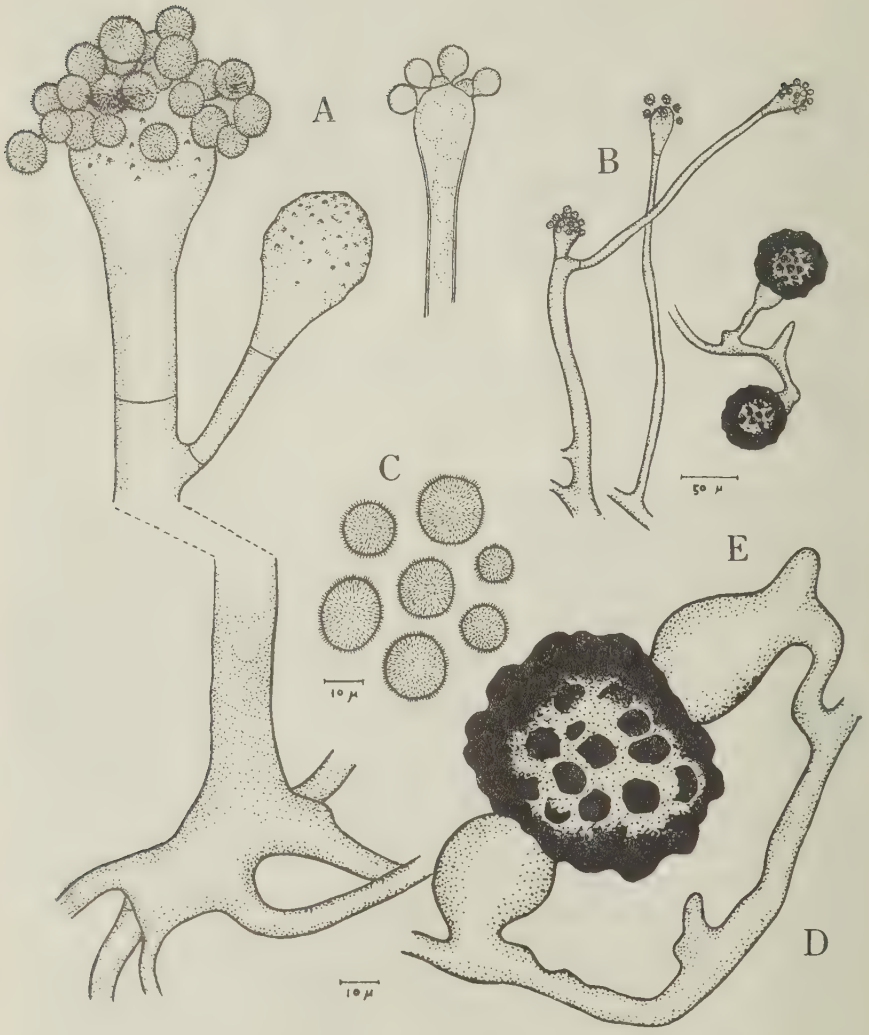


Fig. 15. *Cunninghamella homothallica*
A. B. Habitat C. Conidia D. E. Zygospores

fall off at maturity, 14–19×10–16μ; conidia on lateral vesicle globose or ovoid, echinulate, 13–16×10–16μ. Homothallic. Zygospores spherical, covered with wart-like protuberances, "Argus Brown" to "Mars Brown," 25–70μ in diameter. Suspensors equal, smooth, hyaline or brownish coloured, 15–30μ in diameter. Optimum temperature 30°C, scarcely growing and without forming zygospores

at 37°C. Gelatin stub liquefied slowly. Carbon source utilized: mannose, saccharose, glucose, inosit, dextrine, lactose; scarcely utilized glycerine and galactose; not utilized xylose.

Hab. Isolated from soil, Sirokane National Garden, Tokyo (Tubaki, 1949).

This differs from the hitherto known species in homothallic zygospore formation.

16. **Syncephalastrum nigricans** Vuillemin, in Bull. Soc. Sc. Nancy 2 sér. IX p. 34 (1887). Syn. *Syncephalastrum racemosum* Zycha, in Krypt. Fl. Mark Brandenburg VIa Pilze II p. 186 (1935) pro parte.

Colony on malt extract agar widely growing to a height of 1–1.5 cm, at first white, becoming "Down Gray." Aerial mycelium abundantly branched with basal rhizoids, 5–10$\mu$ in diameter. Sporangiophores abundant, monopodially branched, 7 (16)$\mu$ in diameter, brown shaded, and each branches apically capitate to form vesicle, sometimes nodded. Vesicle ovoid, globose or pyriform, covered with abundant short projections bearing sporangia, 23–65$\mu$ in diameter. Sporangia cylindrical or pyriform, containing 2–3 spores in a series, 9.5–24×3.5–6.5$\mu$. Spores globose or ovoid, slightly roughened, 3–5$\mu$ in diameter. Chlamydospores and zygospores not observed.

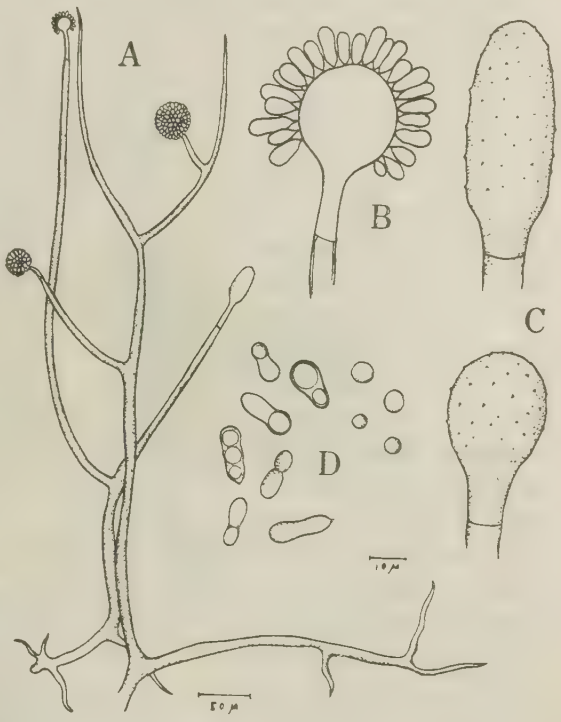


Fig. 16. *Syncephalastrum nigricans*
A. Habitat B. A cluster of sporangia on vesicle C. Two forms of vesiles D. Sporangia d spores

Hab. Isolated from the mortar wall of the "miso" brewery chamber, Gihu Prefecture (Tubaki, 1950).

This species resembles to *S. racemosum* in appearance of colony and spore size, but distinguished from the latter in number of spores contained in

sporangia and branching of sporangiophores, the latter containing 5–10 spores in a sporangium.

17. **Mortierella pusilla** Oudemans var. **isabellina** Oudemans, in Extr. Arch. Néerl, Sc. Nat. II. 7 p. 876 (1902); Zycha, l. c. p. 197.

Colony on malt extract agar restrictly glowing to a thick cottony felt with a height of 3 mm, papillate at the center, white to "Isabella color." Sporangiophores commonly simple, at times monopodially branched, rather delicate and slender, 2–2.5$\mu$ in diameter. Sporangia spherical with deliquescent wall, smooth, 10–25$\mu$ in diameter, smoky coloured, destitute of collar at base. Sporangiospores ovoid or subglobose, 2.5–3 (4)$\mu$ in diameter, hyaline. Chlamydospores numerous, globose, or taking a shape of large globular swelling, intercalar or terminal, 20–40$\mu$ in diameter, smoky coloured. Zygospores unknown.

Hab. Isolated from mount-soil, Gihu Prefecture (Tubaki, 1959).

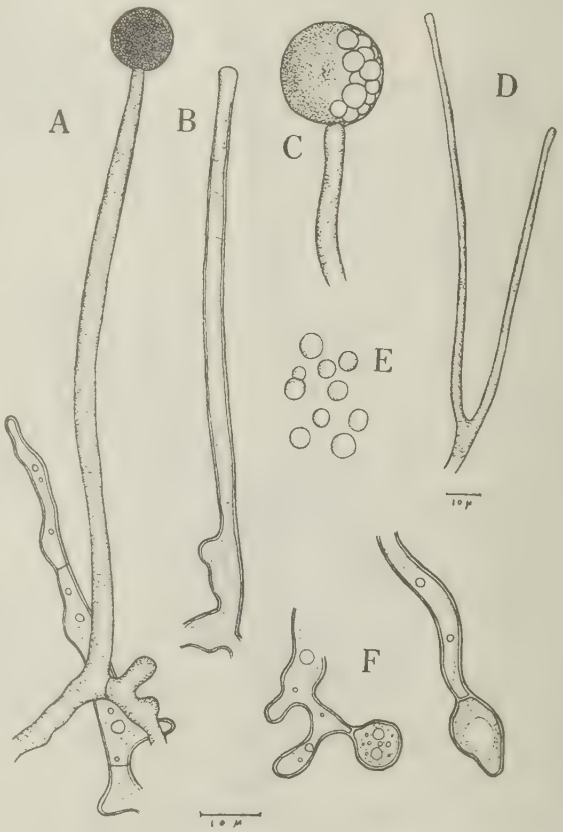


Fig. 17. *Mortierella pusilla* var. *isabellina*
A. Habitat B. D. Sporangiophore after maturity C. Sporangium E. Sporangiospores F. Chlamydospores on hyphae

This resembles to *Mucor Ramannianus* in colonial arpearance except for its colour.

18. **Mortierella pusilla** Oudemans var. **vinacea** Dixon-Stewart, in Trans. Brit. Mycol. Soc. XVII p. 208 (1932); Zycha 1. c. p. 198.

Colony on malt extract agar restrictly growing to a thick cottony felt,

with a height of 3 mm, becoming "Russet Vinaceous" when matured. Sporangiophores racemosely branched, rather delicate and slender, 4–6.5$\mu$ in diameter. Sporangia spherical with deliquescent wall, smooth, reddish brown, 13–25$\mu$ in diameter, commonly without collar. Sporangiospores irregular in shape, polyhedral, 2.5–3 (5)$\mu$ in diameter, slightly reddish coloured. Chlamydospores sometimes present, 14$\mu$ in diameter, intercalarly in submerged hyphae. Zygospores not observed.

Hab. Isolated from soil, Mt. Hôraiji, Aiti Prefecture (Tubaki, 1950).

The present species resembles to *Mort. pusilla* var. *isabellina* in size of sporangia and spores, differing, however, in colonial colour and spore shape. As described above, this is very near *Mucor Ramannianus* in colour of colony and spore size, except for the absence of columella.

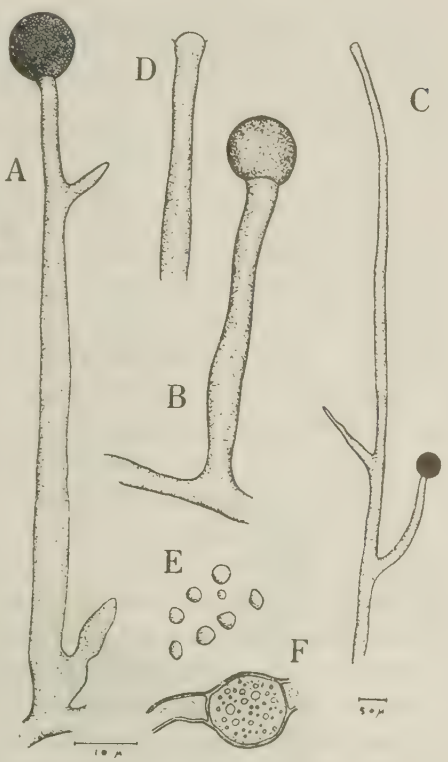


Fig. 18. *Mortierella pusilla* var. *vinacea*
A. B. C. Habitat D. Sporangiophore after maturity
E. Sporangiospore F. Chlamydospore on hypha

## Prof. Dr. Joh$^a$. Westerdijk 引退記念基金募集に就て

和蘭國 Baarn の "Willie Commelin Scholten" 植物病理學研究所長兼 Utrecht 及 Amsterdam 兩大學教授 Johanna Westerdijk 女史は本年九月末日を以て所長並に教授の職を引退し "Centraal Bureau voor Schimmelcultures" (C. B. S.) の所長として畢生の菌株保存事業を繼續されることとなつた.

同女史は 1917 年和蘭最初の婦人教授として兩大學に植物病理學を開講し斯學の水準を高め 亦多くの困難を排除して菌株保存事業を 世界的のものとなし 各國の菌學者に與へた功績は少くない. 現在 C. B. S. に保存の菌株は 8400 株に及ぶと云う.

今回 退職されるに當つて 知友 門下生等相諮つて "Johanna Westerdijk Fund" を募集し同女史の功績を紀念すると共に 研究費用を授ける爲國内に 15 名, 國外に 28 名の委員を選定して募金委員會を設置することゝなり不肖委員に指名された. 就ては多少に拘はらず 御申込の金額を下名宛に御送金下されば 適宜の方法を以て委員會宛に傳送し度いと思ふ.

尙ほ和蘭植物病理學會は 同女史特別紀念號を發行して 引退紀念式の席上 これを贈呈する豫定の由である.

財團法人 長尾研究所 小 南 清

# Studies on the Sporobolomycetaceae in Japan : I. On Tilletiopsis

By Keisuke Tubaki

椿啓介：日本産スポロボロミセス科の研究 I. ティレティオプシス屬

The family Sporobolomycetaceae was established in 1930 by Derx[1], director of Treub Laboratory of Buitenzorg. *Sporobolomyces* kluyver et Van Niel[1], *Bullera* Derx[1], *Itersonilia* Derx[2][4], *Tilletiopsis* Derx[1][5] and *Sporidiobolus* Nyland[3][4] are included in this family. The *Sporobolomyces* was at first found by kluyver in the contaminated cultures of *Endomyces albicans* which was sent from Dr. Saito, and, since then, many works about this genus and *Bullera* were added from Japan and other countries, although, as far the genera *Itersonilia*, *Tilletiopsis* and *Sporidiobolus* are concerned, there was no record of isolation from Japan.

The members of these genera have characteristic aerial "ballistospore" which was named by Derx as homologous organ with basidiospore, being discharged violently from sterigmata when matured.

Although this family is provisionally included in Basidiomycetes as progenitors of the Ustilaginales, more studies about life history and nuclear condition of this group are necessary to establish a distinct systematic position.

The generic name *Tilletiopsis* was given to a fungus found on some leaves by Derx in 1930[1] and validated with a short Latin description in 1948[2].

In 1950, Nyland[5] published two additional species *T. minor* and *T. washingtonensis*. According to him, there is no significant differences between *T. minor* and Derx's strain 1, and also between *T. washingtonensis* and Derx's strain 4, all of them resembling somewhat to the members of *Entyloma*, *Ustilago* and *Tilletia*. Accordingly, only two species, *T. minor* and *T. washingtonensis* remain as distinct. The ballistospores of this genus bud profusely, forming yeast-like colonies and later yielding mycelia, which produce again ballistospores on short sterigmata.

According to the writer's observation upon the Nyland's strains given from himself, there is no clamp-connections on hyphae and no hyphal fusion.

Derx's original description on *Tilletiopsis* is as follows:

Mycelium hyalinum, septatum, repens, sterigmata in area ascendentia formans. Sporae solitatiae, falcatae, leves, hyalinae. Species tipica: *Tilletiopsis* spec. No. 4 Derx.

The members of this genus has not yet been found in Japan. During the summer of 1951, the writer isolated 80 strains of Sporobolomycetaceae from various leaves by using the spore fall method. Among of them, following 16 strains from leaves of 13 different hosts were found to be the members of *Tilletiopsis*.

| Number of cultures | Host | Date of Isolation | Locality |
|---|---|---|---|
| 550–11 | *Prunus Persica* var. *vulgaris* | July., 17 | Omori, Tokyo |
| 552–11 | *Daphne odora* | „ | „ |
| 565–2 | *Hibiscus mutabilis* | July., 18 | Mejiro, Tokyo |
| 629–1 | *Acer* sp. | Aug., 8 | Koisikawa, Tokyo |
| 639–1 | *Evonymus Sieboldianus* | Aug., 15 | Meguro, Kokyo |
| 640–2 | *Acer* sp. | „ | „ |
| 641–1 | *Callicarpa japonica* | „ | „ |
| 642–2 | *Quercus serrata* | „ | „ |
| 644–2 | *Cornus controversa* | „ | „ |
| 659–1 | *Spiraea cantoniensis* | Aug., 27 | Sinagawa, Tokyo |
| 659–2 | „ „ | „ | „ |
| 664–2 | *Paeonia suffruticosa* | „ | Omori, Tokyo |
| 680–3 | *Aesculus turbinata* | Sept., 7 | Meguro, Tokyo |
| 681–2 | *Trichosanthes cucumeroides* | „ | „ |
| 682–2 | *Cornus controversa* | „ | „ |
| 689–3 | *Acer.* sp. | „ | Nakano, Tokyo |

6 strains of them (565–2, 640–2, 642–2, 644–2, 659–2, 680–3) were found to be the same with *T. minor*.

1 strain of them (629–1) resembles to *T. minor*, differing, however, in its more yellowish color, without producing soluble pigment and making flat colony on the agar plate. The name *Tilletiopsis minor* var. *flava* is proposed to it.

2 strains of them (682–2, 689–3) has lilac color and soft colony. These represent a new species, *Tilletiopsis lilacina*.

5 strains of them (550–11, 552–11, 659–1, 664–2, 681–2) have a colony of cream color and their spores are smaller than those of *T. washingtonensis*.

Another new species, *Tilletiopsis cremea*, is established upon these strains.

All of the cultures were found to produce no antibiotics to other molds, yeasts and bacteria.

Key to species

Colony yellowish
- Colony yellow, then brown ..... *T. minor*
- Colony bright yellow ..... *T. minor* var. *flava*

Colony cream colored
- Surface tough ..... *T. washingtonensis*
- Surface soft ..... *T. cremea*

Colony lilac-colored ..... *T. lilacina*

1. **Tilletiopsis minor** Nyland

Budded cells filiformed, straight, usually somewhat larger than ballistospores. Hyphae commonly delicate, septate, branched, 1.0–2.5$\mu$ in diameter, hyaline when young, then darker, older colonies tough and cartilaginous. Ballistospores reproduced from mycelium as from ballistospores, hyaline, curved, 5.0–17.0×1.0–2.0$\mu$ in diameter, eccentrically attached to sterigmata of hyphae, ballistospores or budded cells. Chlamydospores terminal or intercalar on hyphae, hyaline, 3.0–13.0$\mu$ in diameter, globose, obovate or clavate, singly produced or in chains. Colony on malt extract agar yellowish to "Sanford's brown," brownish soluble pigment produced in age, surface uneven and wrinkled, reverse yellowish brown. On malt extract liquor, formed wrinkled, tough pellicle which ascending the wall of tube, soluble pigment produced. Optimum temperature 25°C.

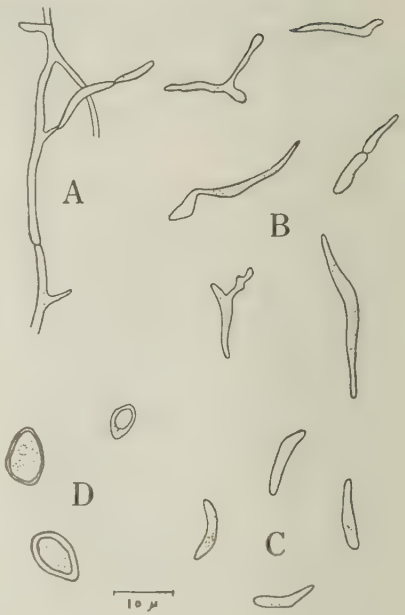


Fig. 19. *Tilletiopsis minor*
A. Ballistospores produced from hypha B. Budded cells C. Ballistospores D. Chlamydospores

Habitat: Surface of living or dead leaves, in the vicinity of Tokyo (Summer, 1951).

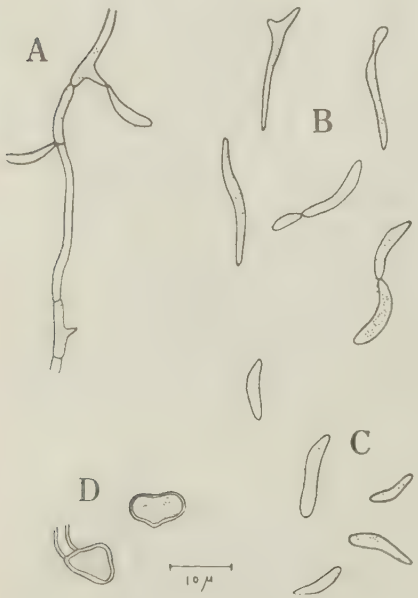


Fig. 20. *Tilletiopsis minor* var. *flava*
A. Ballistospores produced from hyphae B. Budded cells C. Ballistospores D. Chlamydospores

2. **Tilletiopsis minor** Nyland var. **flava** Tubaki var. nov.

**A typo differt coloniis pallide flavescentibus, non cartilagineis.**

Budded cells filiformed, straight, usually somewhat larger than balli-

stospores. Hyphae commonly delicate, septate, branched, 1.0–2.0$\mu$ in diameter, hyaline when young, then becoming yellowish. Ballistospores reproduced from aerial mycelium or from primary ballistospores, finely granulated, 6.5–18.0×1.0–3.0$\mu$, eccentrically attached to sterigmata of hyphae, ballistospores or budding cells. Chlamydospores terminal or intercalary on hyphae, hyaline, 5.0–10.0$\mu$ in diameter, globose, obovate or irregularly elongate, almost singly produced. Colony on malt extract agar, "Light Orange-Yellow" to "Mars Yellow," not so tough, without producing soluble pigment, surface flat, slightly wrinkled, reverse yellowish. On malt extract liquor, formed wrinkled, tough pellicle which ascending the wall of tube, no soluble pigment produced. Optimum temperature 25°C.

Habitat: Living leaves of *Acer* in Tokyo (Summer, 1951).

This variety differs from the typical species in its bright yellowish color and consistency of colony, producing no soluble pigment.

3. **Tilletiopsis lilacina** Tubaki sp. nov.

**Cellulae gemmatae filiformes, plerumque majores quam ballistosporis. Hyphae sinuosae, septatae, ramosae hyalinae, 2–5$\mu$ in diam. Ballistosporae e myceliis aerialibus vel ballistosporis primariis productae, minute granulatae hyalinae, curvatae, falciformes, 6.5–18×1–3$\mu$, non mediae in sterigmatibus e hyphis, ballistosporis vel cellulis gemmatis generatae. Chlamydosporae rarae terminales fere globosae, circa 10$\mu$ in diam. Coloniae in hordeo-agarico albae dein "pale lilac," superne rugulosae, mucosae numquam cartilagineae, reverso "lilac-brown."**

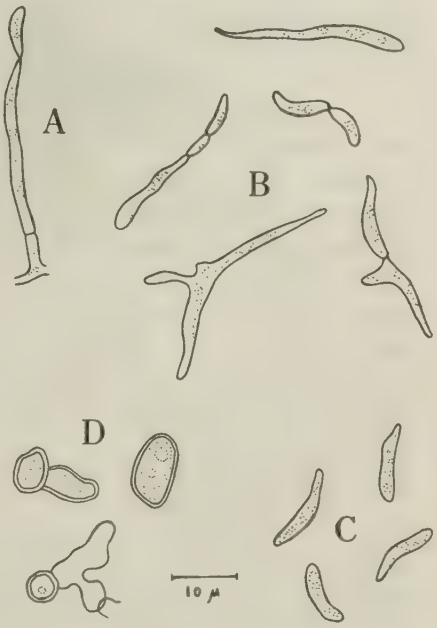


Fig. 21. *Tilletiopsis lilacina*
A. Ballistospores produced from hypha B. Budded cells C. Ballistospores D. Chlamydospores

Budded cells filiformed, usually somewhat larger than ballistospores. Hyphae sinuous septata, branched, hyaline, 2.0–5.0$\mu$ in diameter. Ballistospores reproduced from aerial mycelium or from primary ballistospores, finely granulated, hyaline, curved, sickle shaped, 6.5–18.0×1.0–3.0$\mu$, attached eccentrically to sterigmata of hyphae, ballistospores or budded cells.

Chlamydospores rarely produced, terminal on hyphae, commonly globose, about 10$\mu$ in diameter. Colony on malt extract agar, white to "Pale lilac," finely wrinkled, soft, cheesy consistency and not so cartilaginous, reverse "lilac-brown." On malt extract liquor, formed wrinkled pellicle which ascending wall of tube, no soluble pigment produced. Optimum temperature 25°C.

Habitat: Living leaves of *Acer* and *Cornus controversa* in Tokyo (Summer, 1951).

The present species differs from *T. washingtonensis* in its colonial color, consistency, spore size and number of chlamydospores.

4. **Tilletiopsis cremea** Tubaki sp. nov.

**Cellulae gemmatae filiformes, plerumque paulo majores quam ballistosporis. Hyphae septatae ramosae hyalinae 2–5.5$\mu$ in diam., passim intercalariter cellulas vacuas facile separabiles formantes. Ballistosporae e myceliis aut ballistosporis primariis productae curvatae falciformes hyalinae 9–18×1–3$\mu$, non mediae in sterigmatibus e hyphis, ballistosporis vel cellulis gemmatis generatae. Chlamydosporae terminales hyalinae 3–10$\mu$ in diam., globosae, obovatae vel irregulariter elongatae. Coloniae in hordeoagarico coloniis fermentorum similares, colore "cream – Light Buff," planae mollinae non cartilagineae, reverso cremeae.**

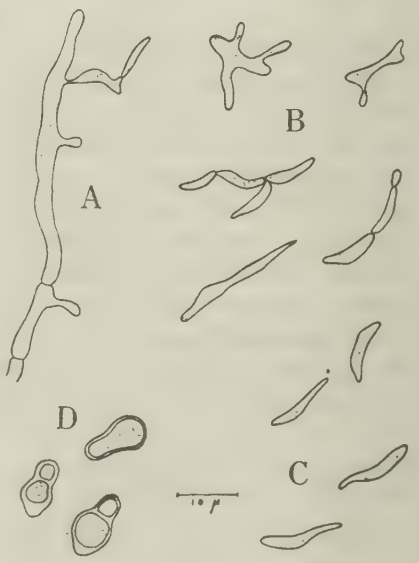


Fig. 22. *Tilletiopsis cremea*
A. Ballistospores produced from hypha B. Budded cells C. Ballistospores D. Chlamydspores

Budded cells filiformed, usually somewhat larger than Ballistospores, forming yeast like colony. Hyphae septate, branched, hyaline, 2.0–5.5$\mu$ in diameter, formed vacant cells at places and each cells abjoined easily. Ballistospores reproduced from mycelium or from primary ballistospores, curved, sickle-shaped, hyaline, 9.0–18.0 × 1.0–3.0$\mu$, attached eccentrically to sterigmata of hyphae, ballistospores or budded cells. Chlamydospores terminal on hyphae, hyaline, 3.0–10.0$\mu$ in diameter, globose, obovate or irregularly elongated. Colony on malt extract agar, white to "cream" to "Light Buff," flat and soft, not so tough and cartilaginous, reverse cream color. On malt extract liquor, formed flat, slender pellicle which ascending wall of tube, no soluble pigment produced. Optimum temperature 25°C.

Habitat: Living on dead leaves of many species of host in Tokyo (Summer, 1951).

This differs from the above mentioned species in its spore size, soft consistency of the colony and cream colony color.

The cytological study of ballistospores of these species was not investigated. According to Nyland, ballistospores and vegetative cells are said to be uninucleate.

*T. washingtonensis* seems to be differing morphologically very much from the writer's cultures.

All of the cultures isolated has not yet been studied about their ecological relations to the leaves of hosts, but Nyland described that the *Tilletiopsis* may represent no-nparasitic forms of the "White Smuts."

The fungi included in Tilletiopsis is so weaker than other fungi as they are overgrown easily by the latter on agar plate, but the formation of numerous ballistospores seems to cover their weakness in nature. As their chlamydospores are apt to be produced at lower temperature below 20°C, they will pass the winter in stage of chlamydospores on the leaves of hosts.

It will be the reasons how no-isolation has been hitherto known from Japan that to isolate this group requires the special "Spore-fall method," and no colony in natural environment can not been seen with naked eyes.

Their life cycle and relation to the host will be considered on subsequent report.

Special thanks are due to Dr. Kominami, and Dr. Kobayasi for many guidances. The writer is also indebted to Miss. Sugiyama for helping his collecting the samples.

## Summary.

16 strains of *Tilletiopsis* was isolated from various hosts. 6 strains of them were identified as *Tilletiopsis minor* Nyland.

1 strain was recognized as new variety, *Tilletiopsis minor* var. *flava*, 2 strains as new species, *Tilletiopsis lilacina*, 5 strains as new species, *Tilletiopsis cremea*.

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# 日本産グラフィオラ屬に就て

小林義雄

Yosio KOBAYASI: On the genus *Graphiola* found in Japan

本屬は既に 1823 年に Fries (Syst. Myc. II p. 572) により *Phacidium Phoenicis* Moug. の名を以て發表せられた菌をタイプとするもので，本種はナツメヤシの生葉上に生ずる。1824 年に Poiteau はパリーで栽培のヤシ類の生葉につく同菌を研究し，此 *Graphiola* 屬を設け，委しい記載をなした。同年に Link は *Elpidophora* 屬の種類について發表しているが，これは本種と同一物と見られている。本菌は一見して變形菌にも似て居り，また不完全菌類，黒穂菌類，子囊菌類にも似た點があり，所謂分類系の中間的存在であつたから，當時この分類學上の位置については諸說區々であつた。Fries はこれを Pyrenomycetes の一菌とし，Poiteau は變形菌の新屬として扱ひ，Chevallier は黒穂菌類に，Leveille は Coniogastres という群をつくり，これに入れた。von Höhnel (1909) は不完全菌類に入れ，*G. Phoenicis* と以て或る未知の黒穂菌類の種の分生子型であらうと記している。1882 年に Fischer はストラスブルグ植物園内溫室のヤシ葉上に生じた同菌の研究を de Bary の指導の下に行ひ，形態，發生，生活史等につき委しい研究成果を擧げている。形態に關しては外皮，内皮，胞子を生ずる菌絲，子絲等に分けて記している。彼は其後 1920, 1922 年の兩回に亘り論文を出して居り，分類學上の位置を論じ，これを以て新科 Graphiolaceae を設け，近緣の屬と比較し，本屬中の數種につき異同を示している。

次いで Killian (1924) は同菌の發生學的及び細胞學的研究をなし，今日に於ける分類學上の位置を一應確立したのである。

## 分類學上の位置，類緣

Fischer 及び Killian の研究の結論が現在の定說となつている。それによれば本菌の子實體を一個の胞子堆 (Sorus) と見做す。この中に子絲と混じて多數の實菌絲 (成熟して胞子を生ずるもの) が並び，各菌絲は分裂子狀に分裂するが，その各細胞を黒穂菌類の燒焦胞子 (Smut spore, 卽ち廣義の Teliospore) と考へる。但し黒穂菌類では燒焦胞子が發芽すると普通は前菌絲が出來るが，この菌では直接に芽胞が出來る。これを擔子胞子に相當するものと考へる。斯くして，この菌を含む *Graphiola* は擔子菌類の黒穂菌目に入れられ，Graphiolaceae Fischer〔in Ann. Myc. XVIII p. 192 (1920)〕が設けられた。この科の特徵は子實體 (胞子堆と同義) がコップ狀で厚い皮層を具へ，燒焦胞子がこの中に連鎖狀に生じ，これらの間には子絲が出來る點である。此科に屬するものとして *Graphiola* の他に *Shropshiria* 及び *Stylina* が擧げられる。*Shropshiria* はパナマ地方の竹の類で *Chusquea simpliciflora* の葉鞘に生ずる *S. Chusqueae* Stev. (in Mycologia XIX: 231–235 (1927)) がタイプとなつている。この種の子實體は菌核狀の硬い子座となり，この表面に多くの凹處が生じ，その一つ一つが一個の胞子堆に相當する。

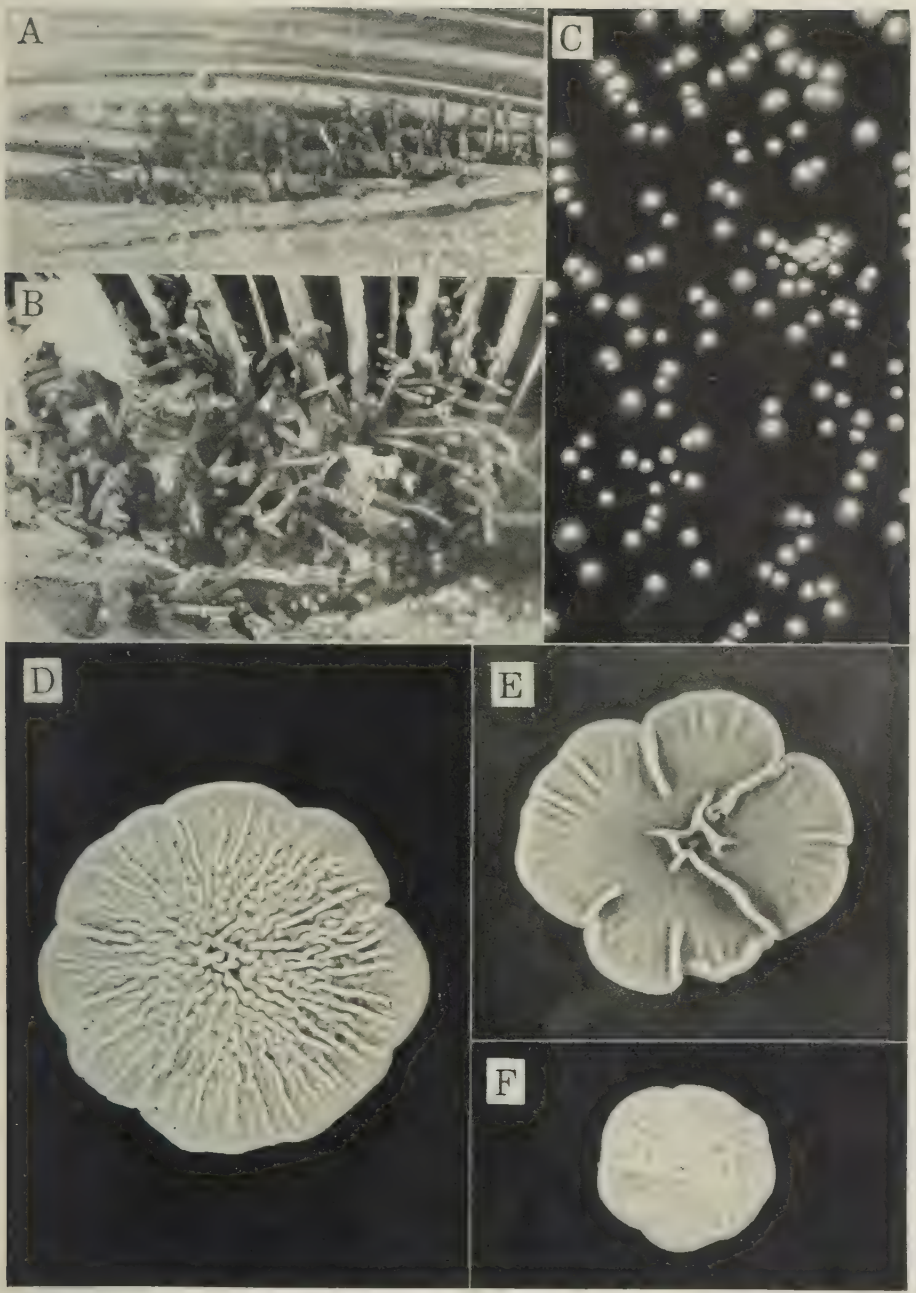


Fig. 23. A–C. *Graphiola cylindrica.* D–F. *Tilletiopsis* spp. A. Young fruitbodies (×2) B. Mature fruitbodies (×2) C. Colonies on agar culture media (x1) D. Colony of *T. lilacina* (×3) E. Colony of *T. minor var. flava* (×3) F. Colony of *T. cremea* (×3)

但しこの胞子堆の皮層は並列した菌絲で出來ては居らず，淡色であり，胞子堆の中に子絲を缺く。本屬が *Graphiola* と似ている點は芽胞の出來方にあるので，燒焦胞子は連鎖狀をなし，斯る鎖狀の細胞が並列密生して胞子堆をなす。芽胞は鎖狀に連る細胞の上部のものに出來て横生である。*Stylina* は *Sphaeria disticha* Ehrenb. をタイプとして Sydow (in Ann. Myc. XVIII: 192 (1920)) が設けたもので，胞子堆が數個づつ集つて子座を形成し，子絲を缺き，燒焦胞子は個々に分離せず鎖狀に連り，後に委縮す。芽胞は二角形のタテ形である。印度の *Dracaena draco* の葉上に採られたが其後ビロウ葉上にも見出された。

尙ほ *Graphiola* との類緣性が論ぜられて居る屬に *Coniosporium* 及び *Farysia* がある。前者は不完全菌類に屬し，胞子の形成が似て居り，後者はスケ類其他につき，黑穗菌類に屬し，外觀及び子絲の存在することが似ているが，胞子の形成が異る。以上の *Graphiola*, *Shropshiria*, *Stylina*, *Farysia* 等に屬する種類がすべてヤシ科，ユリ科，スゲ科，イネ科等の上に近緣な寄主を持つていることは，系統的な類緣を示すようにも思はれる。次に *G. Phoenicis* に關して研究された發生的事實を略記すると，先づ芽胞内には單核があり，これから發芽して寄主細胞内に侵入する菌絲も同じく單核性である。斯る菌絲の群が寄主の葉の表皮下に形成せられ，この菌絲堆の緣邊部より垂直に厚膜の菌絲が多數生じ，これらは依然として單核で密生し，分枝する。これが子實體の外皮を形成し，全體を圍んでいる。菌絲堆の中央部よりは燒焦胞子となるべき菌絲及び子絲が出來る。これらの細胞はすべてはじめは單核である。次いで燒焦胞子となるべき菌絲内には多くの核が生じ，更に多くの横隔壁が出來る。これら一連の鎖狀細胞のうち基部のものは單核性，これより少しく上部の細胞には數個の核があり，次いで雙核性の細胞が續き，上部の細胞内にて2核が合一して複相核となるのである。複相核は次いで2回核分裂（減數分裂と思はれる）をなし，同時に細胞の横より3～6個の突起を生じ，4個の娘核のうち1個は母細胞（つまり燒焦胞子）内に殘り，他の3個又はこれの分裂によつて出來た倍數の核が突起の中に入る。この頃，燒焦胞子は個々に分離し，各突起は一個づつの核を包んで芽胞（擔子胞子）となる。この芽胞は單細胞の儘のものもあり，更に分裂して2細胞となるものもある。これは成熟して酵母の如く出芽するか或は發芽管を出す。

以上の如く本屬の燒焦胞子と稱するものは核相の點に於て黑穗菌類のそれと相同のように思はれる。但し前菌絲が省略せられている。黑穗菌類に於ても前菌絲の省略は *Ustilago longissima* で行はれている。また本菌の子實體の皮層形成に似た例を黑穗菌類に探すと，*Sphacelotheca* がある。これら及び前記の *Farysia* などが *Graphiola* と一般の黑穗菌類との間の橋渡しとなると考へられる。しかし前記の如く Graphiolaceae の特徵として擧げられている諸點は本科を單に黑穗菌目の一科として置くには餘りに大きな特徵であり，むしろ Graphiolales なる目を設けるべきであると思はれる。然してこれは子實體の構造の點に於て黑穗菌目よりも一步進んだものと考へられる。別に黑穗菌目の退化型と考へられている Sporobolomycetaceae とは何等直接の關係はない。更に進んだ高等菌類との類緣を考へてみると Auriculariales の *Phleogena* 屬が子絲の存在，子實體が乾燥質で大形なこと，擔子胞子が厚膜な點等で似ているが，後者の胞子を生ずる細胞

列は多胞の擔子基であつて，*Graphiola* の鎖狀燒焦胞子列とは相似の器官である。結局 *Graphiola* と高等菌類との間には今のところ直接連絡となる群を見出すことが出來ない。

**種類** 現在迄に記載された本屬の種類は次の如くである。

1. *G. applanata* Sydow et Butler インドの *Phoenix sylvestris* 葉上　2. *G. Arengae* Rac. ジャバのサトウヤシ (*Arenga sacchariferae*) 葉上　3. *G. Borassi* Sydow et Butler インドの *Borassus flabellifer* 葉上　4. *G. cocoina* Pat. Gambier 島ヤシ (*Cocos nucifera*) 葉上　5. *G. compressa* Fischer アメリカの *Chamaerope humilis* 葉上　6. *G. congesta* Berk. et Rav. アメリカの *Chamaerope Palmetta* 葉上　7. *G. cylindrospora* Sydow H. et P. フイリッピンの *Livistona* sp. 葉上　8. *G. macrospora* Penz. et Sacc. ジャバの *Calamus* sp. 及び *Plectocomia* sp. 葉上　9. *G. Phoenicis* (Moug.) Poit. 各地の *Phoenix paludosa, P. sylvestris, P. dactylifera, P. acaulis* 等の葉上　10. *G. Thaxteri* Fischer アメリカ，フロリダの *Sabal megacarpa* 葉上

以上のうち6種を Fischer は初生胞子，つまり2分する以前の胞子の形により次の2群に分けている。

1. 初生胞子が丸く，燒焦胞子の細胞の中央に環狀に排列するもの……*G. Phoenicis, G. Thaxteri, G. Arengae*

2. 初生胞子が長形で燒焦胞子の細胞の先に環狀に排列するもの……*G. congesta, G. Borassi, G. cylindrospora*

其他の種類，卽ち *G. applanata, G. cocoina, G. compressa, G. macrospora* 等は明らかな種類と認めるには未だ記載が不充分のようである。本屬のタイプである *G. Phoenicis* を Fischer 其他の記載より總合して見ると次の如くなる。

子實體は寄主の葉の上下面，稀に中肋に生じ圓形又は長形の粒狀で徑 1–1.5 mm，高さ 0.5 mm となる。その外皮は厚膜組織よりなり黑色，內皮は無色の薄膜質，剝落し易い。成熟すると胞子を生ずる菌絲と子絲との黃色の束が子實體の中央を破つて突き出る。この束は外皮の孔の上に圓筒狀に直立する。胞子は球狀又は楕圓體狀，徑 3–6$\mu$，膜は厚く平滑，無色，子絲は空隙が狹く，太さ 10–15$\mu$，長さ 2 mm 以上ある。北アフリカ，歐洲，北米，中米，南米（ウルグアイ），インドスタン，セイロン，太平洋諸島（ニューカレドニア，ハワイ），其他濕室栽培のヤシ類に屢々見出される。本種は我國にも栽培のヤシ類，或はヤシ科植物の生葉上に他分見出されると思ふが未だ正式な報告はない。但し次の變種が本邦より知られている

*Graphiola Phoenicis* Poit. var. *Trachycarpi* P. Henn. in Hedw. XLIII p. 150 (1904); Sacc. Syll. Fung. XVII: 493 (1905)

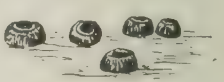

Fig. 24. *Graphiola Phoenicis* var. *Trachycarpi* のコタイプ標本より複原した子實體 (×6)

本變種は故吉永虎馬氏が土佐の伊尾木村にて 1904 年 11 月にシユロ (*Trachycarpus excelsa*) の生葉上に見出した菌に基いて記載されたものであり "Sporis globoso-angulatis, 3–4$\mu$ diam. membrana levi, crassa, flavo-brunneola." とある。東京科學博物館の腊葉庫に納つた吉永氏採集の標本中にはコタ

イブ標本と1906年10月に安藝町妙見山麓のシユロ上に採られたものとがある。子實體は葉面に散生，或は2–3個宛密生し，半球狀に盛上り，徑0.5–0.7 mm，高さ0.2–0.4mm，全體黑色，炭質，上面は平で噴火孔狀の孔がある。初生胞子は楕圓形，大さ5×6μ位，中央に隔壁を生じ，この部分が少しく縊れる。後に各細胞は分離し，單細胞の胞子となる。稍厚膜，淡黃褐色，略球狀或は少しく多角狀をなす，徑4–5μ.

これと *G. Phoenicis* の記載とを比較するに，日本産のものは子實體が稍小型であるが，大體の外形は似て居り，胞子は原記載には角張つて居るとあり，余の見たところでも多少の角はあるが，また殆んど球に近いものもあつた。この角は標本が乾燥したために出來たものか，或は未熟のためにあるものかは判らぬが特に變種として擧げる程の特徵でもないように思はれる。將來生品について再檢する必要がある。

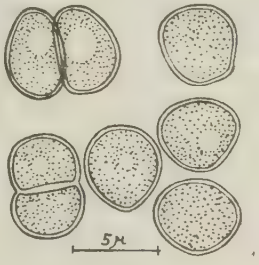

Fig. 25. *Graphiola Phoenicis* var. *Trachycarpi* の胞子

**本屬の一新種に就て** 1950年夏，余が宮崎縣下に採集を試みた際，日南市の製紙工場内のビロウの葉柄上に見馴れぬ變形菌狀の菌を認めた。これは嘗て宮崎大學の平田正一助教授が青島で採り，或人に鑑定を求めたところ變形菌のムラサキホコリカビであると言はれたものと同一種であると服部研究所長より伺つた。1951年3月に平田氏は青島産の生品を持つて余の許に届けられたが其時は果して變形菌であるか，眞正の菌であるか確信のない儘に過して仕舞ふた。その後半年の間に時折諸種の文獻を渉獵して居つたが，どうやら *Graphiola* 屬に近いという推定がついたので1951年末に再び服部新佐氏及び平田氏を煩はして生品を入手，純粹培養にも成功し，ここに本種の所屬を定めることが出來たのである。一見して本菌は變形菌の *Schenella simplex* Macbride (in Mycologia III : 39 pl. 36 (1911)) に似た點がある。しかし後者が互に接着して Aethalium を形成するのに對し，本菌は個々に離れて生ずる。手元の材料では未だ胞子の着き方を示す良好なプレパラートが出來ないが，其他の諸種の點より，本屬のものであることは間違ひないと思ふ。本菌の胞子は球狀，卵狀或は楕圓體狀をなし，其點は Fischer の *G. Phoenicis—Thaxteri* 群に入れられるが，既知の種類で本菌の如く外皮が樽狀或は圓筒狀に延び，全體が大形で長い圓筒狀をなすものはない。其點，本菌は本屬中の特異な一新種と見做すべきものである。天然記念物として著名な日向の青島のビロウ上に斯る熱帶性菌類屬中の特異な新種が見出されたことは極めて喜ばしいことである。尙ほ生態的に著しいことには，本菌の周圍にアリの一種が群擧し，時には圓筒狀の子實體を抱いて嘗める樣子をなす。恐らく本菌の胞子はアリによつて散布せられるものと思はれる。また貝殼蟲の一種が子實體附近に多かつたが，菌との直接の關係は見られない。

Fig. 26. *Graphiola cylindrica* の子實體 (×6)

**Graphiola cylindrica** Y. Kobayasi sp. nov.

**Fructifocatio epiphylla erumpens gregaria vel sparsa, primo ovoidea 0.5–0.7 mm in diam. anthracina, maturitate elongata, peridio duplici. Exoperidium fistulatum vel cylindraceum utrinque truncatum 3–4 mm longum, 1 mm crassum carbonaceum, nitidum, scabrum. Endoperidium maturitate elongatum exoperidio conspicue excellens, columnarium, aequale vel sursum paullo attenuatum, apice truncatum membranaceum 5–7 mm longum 0.7–1 mm crassum badium vel fuligineum, intus capillitiis et massis sporarum repletum, maturitate irregulariter rumpens. Capillitia albida filiformia multi-fasciculata, denique divaricata. Massa sporarum badia, farinacea.**

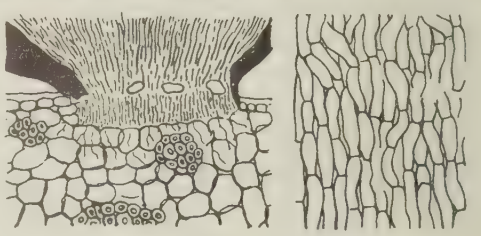

Fig. 27. *Graphiola cylindrica* 左 子實體基部と寄主の葉の縦斷面 (×105) 右 外皮縦斷面 (×2250)

**Endoperidium, capillitia et massa sporarum omnino fugaci. Exoperidium sclerenchymaticum e hyphis longitudinaliter ordinatis compactis fuligineis 2 2.5$\mu$ crassis multiseptatis compositum. Capillitia 17–22$\mu$ crassa e hyphis crassiparietalibus densissime fasciculatis 1–2$\mu$ crassis contexta. Sporae primariae angulato-ovoideae frequenter pedicellatae primo continuae dein septo transversali bipartitae. Sporae solitariae vel bini connexae sphaeroideae, hemisphaericae vel ellipsoideae, 4–6×3.5–4$\mu$, fuscescentes crassiparietales laeves, granulosae.**

Hab. Gregarious on the living leaves of *Livistona chinensis* Br. Isl. Aosima, Hiuga, Kyûsyû, Japan (March, December, 1951—collected by S. Hirata).

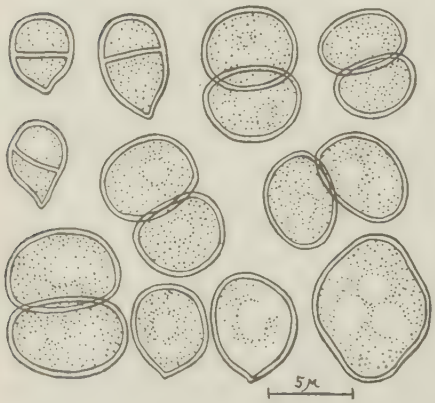


Fig. 28. *G. cylindrica* の胞子

子實體はビロウ葉の上下面に生ずるが下面の方が多い。主として側脈の基部の葉柄に接する部分に多數群生する，菌絲は葉の表面に現れず，子實體の平な底面を以て葉面に坐し，比較的取れ易い。子實體は初め卵形で徑 0.5–0.7 mm，表面は炭黒色の外皮に包まれ，光澤があり，ざらついている。次第に外皮も延び樽形或は圓筒形，長さ 3–4 mm，徑 1 mm 程になるが，内皮に包まれた内部は急激にこれの數倍に延びて圓柱狀となり，長さ 5–7 mm，徑 0.7–1 mm となり，上部は截斷狀をなす。外皮より超出した部分は暗褐色或は灰褐色の薄き内皮に包まれ，尙ほ外皮の上部が環狀に裂けて圓柱の中途に殘存することもある。圓柱の内部には白色，纖維質の多數の子絲が束狀に並び，この間に褐色，粉狀

の胞子（擔子胞子）が充滿する。子絲が更に延びるに從ひ，薄い膜狀の內皮に横の裂目が生じ子絲は露出しはじめ，遂には內皮は上部より剝落し，子絲は筆の穗の如く不規則に擴がる。最後に內皮，子絲胞子はすべて飛散し，あとに炭質の外皮のみが殘る。寄主の葉の柵狀組織中に無色で徑 2–2.5$\mu$ の菌絲を出し，葉の表皮下に子實體の底面を形成し，後にこれを破つて子實體が延びる。外皮は厚膜組織よりなり，菌絲は縱に並び互に密着し，褐色或は黃褐色，徑 2–2.5$\mu$，隔壁多し，子絲は肉眼では略白色の纖維狀であるが，多くの纖維細胞の束よりなり，全體の太さ 17–22$\mu$，各細胞は並列し，互の結合は密で容易に離れ難く，太さ 1–2$\mu$，隔壁は明らかでない。初生胞子は卵形で基部に小柄を具へ，横に隔壁を生じて上下の 2 細胞に分れる。後に各細胞はゆるく接着するか，或は分離する。分離した胞子は

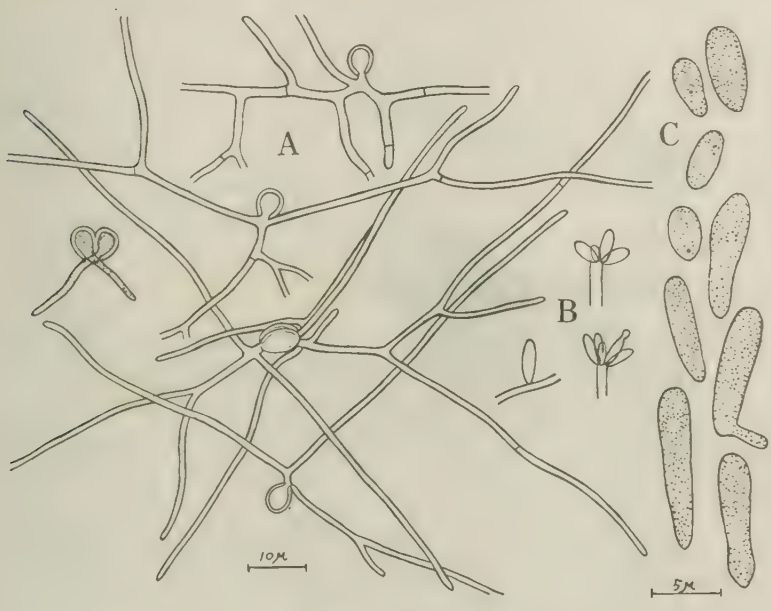


Fig. 29. *G. cylindrica*
A. 胞子の發芽　B. 發芽菌絲上に分生子の生じた狀態　C. 分生子

偏球狀或は半球狀，或は楕圓體狀となり大さ 4–6×?.5–4$\mu$，淡褐色，稍厚膜，平滑，內部は顆粒狀をなす。一端に乳頭狀突起のあるものがあるが，これが發芽孔となる。

胞子の發芽試驗　1951 年 12 月 13 日採集の菌より分離した胞子を 1 月 23 日に麥芽汁に懸滴壓養し 20°C に保つたところ 2 日目に發芽し 26 日には長く延びた。胞子は 2 個づつ離れず發芽するもの，或は單獨に發芽するものがあり，前者では 2 細胞の接合部の一側に發芽孔を生じ，菌絲が延びると同時に，その基部で 2–3 岐する場合が多い。基部の太さ 1.5–1.8$\mu$，先に至れば一樣の太さ（1–1.5$\mu$）となり，無色，薄膜，隔壁は少く，嘴狀突起を缺き，多くは叉狀に分岐する。

純粹培養 菌叢は先づ中央部が盛上つて純白の乳頭狀の小菌叢となり，周緣には薄く菌絲が延び分生子を生じて粉狀をなす。次第に周圍に延び，古くなると半透明，肉質の皮殼狀に盛上り，表面に大型の起伏と，稍細かい蜂窩狀の窪を生じ，この表面の處々に薄く，水を透さぬ菌絲層が生じ粉白をなす。菌絲は一樣な太さ (1–1.5$\mu$) で長く延び，無色，薄膜，處々に隔壁があり嘴狀突起なく，この部分より枝を出す。菌絲の先端に數個の分生子を生じ，或は稀に一側に單立し，各分生子は單胞，棍狀，卵形，楕圓體狀或は圓柱狀で，長形のものは下部が稍細まり無柄，淡黃褐色，或は略無色，平滑，薄膜，大さ 3–12×2–2.5$\mu$ (普通は 5–10$\mu$) 內容は顆粒狀，容易に發芽する。

終りに本研究の材料につき種々斡旋せられた服部新佐博士及び平田正一助教授に深謝する。

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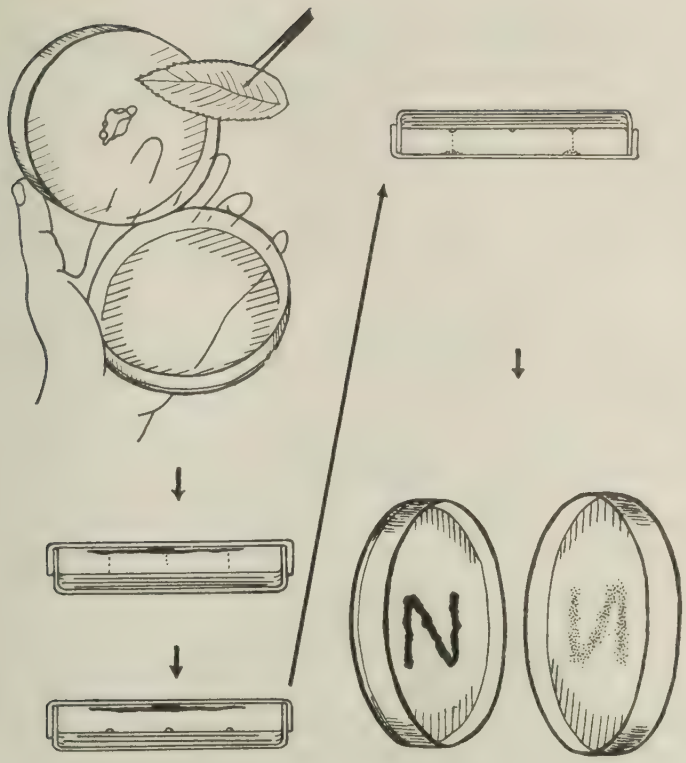
## Sporobolomycetaceae 菌種の分離方法

Sporobolomycetaceae の菌種は別報の如く，特殊な分離方法を要する爲，一般には知られていないが，次に述べる方法を採れば，比較的容易に分離出來る。

卽ち，本菌が特徵とする射出胞子 (Ballistospore) を利用するのである。Derx (1930) が始めに用いた方法を要約すると，同容同量の殺菌シャーレの一方に適當量の固形培地，例へばゼラチンを流し込んで固らせ，その上に，一方の皿に 1.5% 寒天で試料を固定したものを伏せて，本菌を分離している。

亦，九大，山崎教授 (1950) は，Derx の方法を採り *Sporobolomyces* 及び *Bullera* を分離しているが，試料を 1.5% 寒天にて固定し，分離培地として麴汁寒天を用いている。

筆者の用いた方法も根本的には同じであるが，上皿シャーレの裏側に白色ワセリンで試料を固定し，下皿には麥芽浸出液寒天を溶解した後，乳酸々性となしたものに流し込んで固らせ，分離用とした。卽ち，試料として例へば葉片をワセリンで固定させ，上皿を上側にしたまま 25°C の定溫器內に置くと，若し本菌が葉の表面に着生して居る場合は，2 日目には上から落ちた射出胞子が發芽して下の培地上に菌叢を生ずる。この時，試料を固定してある上皿を取去り，新に殺菌した別の上皿と取換へる。この操作は，若しこの儘放置すると培地が酸性である爲細菌は發育しないが，葉面から單に落下したに過ぎない各種絲狀菌又は酵母が蔓延して比較的弱い本菌が侵されるのを防ぐ爲である。次に，上皿を取換へたら常法の如く全體を倒置して 25°C に再び置くと，24 時間內外には，菌叢を生じた本菌は亦更に射出菌子を射出して新しい上皿の裏側に白色粉狀の菌叢の影像を生ずる。玆




*Sporobolomyces* 類を分離する方法

に於て本菌が Sporobolomycetaceae に屬する事が確認される。實際，分離上本菌の菌叢に酷似したものが良く生じ，まぎらわしい事が多い爲，大凡の鑑別をした後に，常法により純粋分離に供している。〔挿圖參照〕

Sporobolomycetaceae を分離するには大體上記の方法に依るが，試料固定劑は，目的にかなへば何でも良く，筆者は上皿全體に寒天層の出來る事，固定力弱い事，或いは特に固定用寒天を調製する事等を避ける爲にワセリンを用いたもので，機械的に固定する事も考へられる。亦，2日目に上皿を取換へる事は季節により幾分の差があり，嚴寒時，戶外の試料を用いた場合は，3日以上經つて漸く菌叢の發育を見る事がある　　（椿記）

# An Additional List of Cultures, Maintained in The Japanese Type Culture Collection, Nagao Institute, Kitashinagawa, Tokyo

Supplement I

(Dec. 1950—May 1952)

During the two years that have elapsed since the publication of the last list of cultures maintained by the Japanese Type Culture Collection, three hundred and sixty four species and strains have been added to the collection. They are listed as a Supplement I, alphabetically according to the species' name. In the last list, we have arranged the species of genus *Aspergillus* in groups according to the classification of Thom and Raper, but it is inconvenient, so we have renewed them in mere alphabetical order, and also we have rewritten the species of other genera which erroneously described in the last list, in correct names.

The accession number of each culture is listed in the left side under its specific name or synonymy. The name of the donor or author is given in parentheses after the abbreviated name of his institute or laboratory. And the history of the culture or any information follows.

At the right margin of the list, the date on which the culture was deposited in the collection is given. For the renewed names of cultures which derived from the last list, the mark xxxx is supplied instead of the date.

As far as possible, the species' names used are in agreement with Bergey's Manual of Bacteriology, 5th ed., 1948; Zycha's "Mucorineae", 1935; Stelling-Dekker's Monograph "Die Sporogenen Hefen", 1931; Lodder's "Die Anasko-sporogenen Hefen, erste Hälfte", 1934; Diddens & Lodder: "Die Anasko-sporogenen Hefen, zweite Hälfte", 1942; Thom & Raper: Manual of Aspergilli, 1942; Raper & Thom: Manual of Penicillia, 1949; Conant et al.: Manual of Clinical Mycology, 1949; or other accepted authorities.

It is requested that communication be addressed to the Director, Japanese Type Culture Collection, Nagao Institute, 6-387, Kitashinagawa, Shinagawaku, Tokyo.

May, 1952

Kiyoshi Kominami
Director

## List of Cultures 1950

Supplement I

(Dec. 1950–May 1952)

*Absidia Butleri* Lendner

1001 BATU (Kominami)-B205-1. (+)-ve strain. From garden soil of Meiji shrine xxxx

1229 NI (Tsubaki) T409-1. (−)-ve strain. From soil 1951

*Absidia coerulea* Bainier

1227 CBS. (+)-ve strain 1951

1228 CBS. (−)-ve strain 1951

*Absidia cylindrospora* Hagem

1002 OUT-3; CLMR-3(a); CBS (+)-ve strain xxxx

1003 OUT-4; CLMR-4(b); CBS (−)-ve strain xxxx

*Absidia ginsan* Saito

1251 FES (Kawada) Ab-3; ACTU-Ab-5; CLMR (Saito) 1952

*Absidia glauca* Hagem

1004 OUT-5; CLMR-5; CBS (+)-ve strain xxxx

1005 OUT-6; CLMR-6; CBS (−)-ve strain xxxx

1215 NI (Tsubaki) T402-1. (−)-ve strain. From soil 1950

Spn.: *Absidia Regnieri* (Lucet et Costantin) Lendner

1252 FES (Kawada) Ab-5; ACTU-Ab-9; CLMR (Saito) 1952

Syn. *Absidia septata* van Tieghem

1011 OUT-12; CLMR-14; CBS (−)-ve Strain xxxx

*Absidia hyalospora* (Saito) Lendner (Syn.: Tieghemella hyalospora Saito)

1006 OUT-7; CLMR-8 (Naganishi)

1182 NI (Tsubaki) T319-1 xxxx

*Absidia Lichtheimi* (Lucet et Costantin) Lendner (Mucor Lichtheimi Lucet et Costantin)

1007 OUT-8; CLMR-8; CBS xxxx

1008 OUT-9; CLMR-10, (Naganishi). From Kauliang Chiu xxxx

1183 NI (Tsubaki) T-186-1. From flower of pumpkin xxxx

1200 UCA (Yamazaki) xxxx

*Absidia Orchidis* (Vuillemin) Hagem (Tieghemella Orchidis Vuill.)

1009 OUT-10; CLMR-12; CBS. (+)-ve strain xxxx

1010 OUT-11; CLMR-13; CBS. (−)-ve strain xxxx

*Absidia ramosa* (Lindt) Lendner (Mucor ramosus Lindt)

1014 NI (Nehira)–107. From dropping of Canary bird xxxx

1124 NI (Kominami). From wheat flour xxxx

1216 NI (Tsubaki) T310–31. From horse dung 1950

*Absidia Regnieri* (Lucet et Costantin) Lendner. See A. glauca Hagem

*Absidia septata* van Tieghem. See A. glauca Hagem

*Absidia spinosa* Lendner

1012 OUT–13; CLMR–15; CBS

1013 BATU (Kominami) E364–12. From soil in Formosa xxxx

1184 NI (Tsubaki) From soil of Hida xxxx

*Acanthocystis serotinus* (Fr.) Singer

Syn. *Pleurotus serotinus* (Fr.) Gillet (Japanese. name: Mukitake)

3106 NI (Kobayasi and Tsubaki). From Nippara 1951

*Achlya bisexualis* Coker

1230 CBS (J, R. Raper) (+)–ve strain 1951

1231 CBS (J. R. Raper) (−)–xe strain 1951

*Acremonium Potronii* Vuillemin

4172 IFO No. Ar–1; CBS (Pollacci) 1950

*Acrostalagmus albus* Preuss

4169 NI (Tsubaki) T399–2. From *Armillaria mellea* 1950

*Actinomyces alni* Peklo. See Streptomyces alni (Peklo) Waksman

*Allescheria Boydii* Shear

2053 IFO No. ZK–2; CBS (Shear) 1950

*Allomyces arbusculus* Butler (sic A. arbuscula Butler)

1232 CBS (Noack) 1951

*Allomyces javanicus* Kniep

1233 CBS (Brooks) 1951

*Amanita virosa* (Fr.) Quélet (Jap. name: Dokutsurutake)

3085 NI (Kobayasi). From Kamabuchi, Yamagata Pref. 1951

*Amphiernia rubra* Grüss. See Sporobolomyces tenuis

*Anabaenopsis* sp.

A004 BLSU (A. Watanabe) strain WII. Atmospheric nitrogen-fixing blue-green algae from Sumatra. 1952

*Anthostomella pullulans* (de Bary et Löw) Bennet. See Pullularia pullulans

*Arthrobotrys oligospora* Fresenius

4188 TEU (Indoh) 1951

*Ascobolus equinus* (Mull.) Mass.

2069 CBS (Gwynne-Vaughan) 1951

*Ashbya gossypii* (Ashby et Nowell) Guilliermond (Nematospora gossypii Ashby et Nowell)

7468 CBS; NRRL Y-1056 1951

*Aspergillus albus* Thom et Church See Aspergillus candidus Link

*Aspergillus alliaceus* Thom et Church

5554 CBS (Church) 1951

*Aspergillus amstelodami* (Mangin) Thom et Church

5533 IFO-A-4; (Thom) 1950

5549 NI (Tsubaki)-T418-3. From a mosquito incenese stick 1951

*Aspergillus archiflavipes* Blochwitz. See A. flavipes

*Aspergillus atropurpureus* Zimmermann

5535 IFO-A-6; CBS (Blochwitz) 1950

*Aspergillus aureus* Nakazawa. See Asp. foetidus Thom et Raper

*Aspergillus auricomus* (Guéguen) Saito (Sterigmatocystis auricoma)

5001 OUT-104 (Saito). From the soil of Sakebrewery xxxx

*Aspergillus avenaceus* G. Smith

5555 CBS; NCTC 1951

*Aspergillus Awamori* Nakazawa

5002 OUT-106; CLMR-32(1) (Usami) "Awamori Koji" xxxx

5003 OUT-107; CLMR-33(2) (Naganishi) xxxx

5004 NI (Nehira) B17; OUT. From Sakashita Brewing Co. A xxxx

5005 NI (Nehira) B18; OUT. 〃 〃 〃 〃 B xxxx

5006 NI (Nehira) B19; OUT. 〃 〃 〃 〃 C xxxx

5007 NI (Nehira) B20; OUT. 〃 〃 〃 〃 D xxxx

5008 NI (Nehira) B21; ACTU (Sakaguchi) KD2024 xxxx

5009 NI (Nehira) B33; ACTU (Sakaguchi) 6023Y xxxx

5010 NI (Nehira) B34; ACTU (Sakaguchi) 6822Y xxxx

5011 NI (Nehira) B41; Km30. 5012 NI (Nehira) B31; Km31 xxxx

5013, 5014, 5015, 5016, 5017, 5018, 5019, 5020, 5021, 5022, 5023 and 5024 NI (Nehira) B46, B48, B49, B50, B51, B52, B53, B54, B55, B56, B57 and B59; Km44, 5, 51, 52, 53, 54, 61, 62, 63, 64, 55 & 76 xxxx

5025 NI (Nehira) xxxx

5026 NI (Nehira) 1086. From soil of Tokyo xxxx

5401 & 5402 BATU (Kominami)-L214-1 & L285-1. From air xxxx

5403 & 5404 BATU (Kominami)-E159-2 & E180-1. From soil xxxx

5405 NI (Nehira)-935; NIK (Saito) xxxx

*Aspergillus awamori* var. *ferrugineus* Nakazawa, Simo et Watanabe

5501 ACTU (Iizuka) xxxx

*Aspergillus Awamori* var. *fumeus* Nakazawa et al.
5492 NIN (Inoue), originated from Takeda. Production of citric acid xxxx
5502 ACTU (Iizuka) xxxx
*Aspergillus Awamori* var. *fuscus* Nakazawa et al.
5503 ACTU (Iizuka) xxxx
*Aspergillus Awamori* var. *minimus* Nakazawa et al. xxxx
5504 ACTU (Iizuka) xxxx
*Aspergillus Awamori* var. *piceus* Nakazawa et al. xxxx
5505 ACTU (Iizuka) xxxx
*Aspergillus Batatae* Saito See Aspergillus niger
*Aspergillus butyraceus* (Bainier) Thom et Raper (Sic *A. butyracea* Thom et Raper; Syn. Sterigmatocystis butyracea Bainier)
5556 CBS (Borrel) 1951
*Aspergillus caesiellus* Saito
5028 OUT-109; CLMR-42; CBS (Saito) xxxx
5030 NI (Nehira). From seed of *Hydnocarpus*, "Daifūshi" xxxx
*Aspergillus caespitosus* Raper et Thom
5557 CBS; NCTC 1951
*Aspergillus candidus* Link
5031 OUT-111; CLMR-39; CBS xxxx
5032 OUT-112; CLMR-40; HU-40 (Oshima). From soil xxxx
5033 NIK (Saito)-925. From "Tanekoji" xxxx
5034 HHTS (Naganishi). From Hainan Island xxxx
5035 & 5036 NI (Nehira) Km 75 & 77 xxxx
5426 & 5427 BATU (Kominami) L1257 & L1642-1. From air xxxx
5428 BATU (Kominami) NK3023. From wheat flour xxxx
Syn. *Aspergillus albus* Wilhelm
5037 OUT-145; CLMR-28; ACTU xxxx
Syn. *Aspergillus Okazaki* Yagi, Hida, Saito et Yamagata
5038 OUT-145; CLMR-76; ACTU xxxx
5490 NIN (Inoue); ACTU xxxx
*Aspergillus candidus* var. *thermophilus* Nakazawa et al.
5039 NIK (Saito) 924 xxxx
*Aspergillus carbonarius* (Bainier) Thom
5040 OUT-113; CLMR-41 (Oshima) xxxx
*Aspergillus carneus* (v. Tieghem) Blochwitz
5558 CBS (Wintzki) 1951
*Aspergillus cellulosae* Hopffe. See Aspergillus fumigatus Fres.

*Aspergillus Chevalieri* (Mangin) Thom et Church

5536 IFO A–20 (Thom) 1950

5550 NI (Tsubaki) T418–4. From a mosquito incence stick 1951

*Aspergillus cinnamomeus* Schiemann. See Aspergillus niger mut. cinnamomeus (Schiemann) Thom et Raper

*Aspergillus citrisporus* v. Höhnel

5537 IFO A–22; CBS (v. Höhnel) 1950

*Aspergillus clavatus* Desmazières

5041 OUT–115; CLMR–47 (Naganishi). From air xxxx

5042 BATU (Kominami) L1688–1. From air xxxx

5043 NIK (Saito) 933 xxxx

5044 NI (Nehira) 1109; NI (Tsubaki) From soil xxxx

5422 NI (Kominami)–NK3001. From wheat flour xxxx

5424 NI (Kominami). From air xxxx

5425 NI (Tsubaki) T190–1. From soil xxxx

*Aspergillus eburneus* Biourge. See Aspergillus niveus Blochwitz

*Aspergillus echinulatus* (Delacr.) Thom et Church (Syn. Eurotium echinulatum Delacroix)

5559 CBS (Church) 1951

*Aspergillus effusus* Tiraboschi

5560 CBS (Church) 1951

*Aspergillus elegans* Gasperini

5045 ACTU; CBS xxxx

*Aspergillus Fischeri* Wehmre

5046 OUT–116; CLMR-51; CBS xxxx

5047 OUT–117; CIMR–52 (Oshima); Kral's Museum xxxx

*Aspergillus flavescens* Wreden

5048 HHTS (Naganishi). From ear-wax xxxx

*Aspergillus flavipes* (Bain. et Sart.). Thom et Raper (Sterigmatocystis flavipes Bainier et Sartory)

5049 NIK (Saito)–926 xxxx

5050 NI (Nehira) 741

5388 BATU (Kominami) xxxx

5389 & 5390 BATU (Kominami), strains L143–3 & L137–4. From air xxxx

5391 NI (Kominami), strain 3013. From wheat flour xxxx

5451 NIN (Takeda) 1950

Syn. *Aspergillus archiflavipes* Blochwitz

5534 IFO A–5; CBS (Blochwitz) 1950

*Aspergillus flavus* Link

5051 OUT-118; CLMR-53; CBS xxxx

5588, 5589, 5590, 5591, 5592 & 5593 ACTU (Iizuka), strains T, C, 1003 (A-9-3), 102(A-7-2), 136(A-7-3), Shoku(A-7-4), (b)(A-11-8) and (a) (A-11-9) 1952

5597 IFO A-40; CRIGF (Nakazawa); USDA (Thom) 1952

Aspergillus flavus-Oryzae group

5463 to 7473 NI (Kominami) xxxx

5594 ACTU (Sakaguchi). Production of kojic acid 1952

*Aspergillus foetidus* Thom et Raper

Syn. *Aspergillus aureus* Nakazawa (non A. aureus Berkeley)

5494 ACTU (Iizuka) B1-4-1 xxxx

var. *acidus* Nakazawa, Simo et Watanabe

5495 ACTU (Iizuka) xxxx

var. *brevis* Nakazawa et al.

5496 ACTU (Iizuka) xxxx

var. *minor* Nakazawa et al.

5497 ACTU (Iizuka) xxxx

var. *murinus* Nakazawa et al.

5498 ACTU (Iizuka) xxxx

var. *pallidus* Nakazawa et al.

5499 ACTU (Iizuka) xxxx

*Aspergillus fumigatus* Fresenius

5052 OUT-119; CLMR-54 (Naganishi)

5053 OUT-120 (Saito). From Rice-embryo xxxx

5054 OUT-121; OHTS xxxx

5055 NI (Nehira)-647 From rice. Diastatic xxxx

5056 NIK (Saito)-931 xxxx

5057, 5058 & 5059 NI (Nehira) Strains 982, 983 and 984. From soil xxxx

5060 NI (Nehira) B37 xxxx

5439, 5440 & 5441 BATU (Kominami) Strains L650-2, 990-3 & L1813. From air xxxx

5442 BATU (Kominami) Strain L1831-3. From a mouldy binocular xxxx

5443 BATU (Kominami) Strain L1942-1. From air xxxx

5444, 5445, 5446, 5447, 5448, 5449, 5450, 5451, 5452, 5453, 5454 & 5455 BATU (Kominami) Strains E329-1, E330 Korea, E373-1, E547, E628-1 Hokkaido, E628-2 Hokkaido, E671 Korea, E677 Korea, E686, E693, 733 Korea & E734 Korea. Form soil xxxx

5456, 5457, 5458 & 5460 BATU (Kominami) Strains L349–1, L384–2, L400–3 and L5378. From air xxxx

5459 & 5461 BATU (Kominami) Strains NK3046 & 3050–1. From cotton fibre xxxx

5551 NI (Tsubaki) T418–1. From mosquito incence stick 1951

5521 FES (Kawada) A–24(2) (f. *floccosus*). From soil 1950

5522 FES (Kawada) A–24 (f. *velutinus*). From soil 1950

5561 CBS (Yuill) (var. *helvola* E. Yuill) 1950

Syn. *Aspergillus cellulosae* Hopffe

5061 OUT–114; CLMR–43 (Oshima) xxxx

*Aspergillus fuscus* Schiemann. See *A. niger* mut. *Schiemanni*

*Aspergillus giganteus* Wehmer

5493 OUT–122; CLMR–56; CBS xxxx

5515 NI (Kominami). From giraffe dung xxxx

5520 FES (Kawada)A–25(1). From forest soil 1950

*Aspergillus glaucus* group

5063 OUT–127; CLMR–57; GIB xxxx

5065 OUT–124; CLMR–59(B) (Naganishi) xxxx

5066 OUT–125; CLMR–60(C) (Naganishi) xxxx

5067 NI (Nehira)–63. From rotten radish xxxx

5068 NI (Nehira)–78. From air xxxx

5069 NI (Nehira)–168. From soil xxxx

5070 NI (Nehira)–193. From Micronecian *Rheum* xxxx

5071 NI (Nehira)–549. From "Shiitake" xxxx

5072 NI (Nehira)–1052. From soil xxxx

5073 HHTS (Naganishi). From Hainan Island xxxx

5074 OUT–126 (Saito) xxxx

5416, 5417, 5418 & 5419 BATU (Kominami). Strains NK2508, 2529, 2537 & 2543. From air xxxx

5075 & 5076 (*A. glaucus* var. *tonophilus* Ohtsuki) THNSW (Ohtsuki)–Strains KE(1205) & –4(1206). From a rusty sword xxxx

*Aspergillus gracilis* Bainier

5420 BATU (Kominami) L3335. From air xxxx

5421 BATU (Kominami) L1895–2. From mouldy lenses xxxx

*Aspergillus granulosus* Raper et Thom

5579 CBS; NCTC 1951

*Aspergillus gymnosardae* Yukawa

5077 OUT–128; CLMR–61; CRIGF xxxx

*Aspergillus Inuii* Sakaguchi, Iizuka et Yamazaki

5506 ACTU (Iizuka) Strain (7)5431 xxxx

*Aspergillus itaconicus* Kinoshita

5078 ACTU (Yabuta), original strain of BSTU (Kinoshita) xxxx

5079 BATU (Kominami)N-105. From mouldy "Umezu" xxxx

5080 NI (Kominami)-NK3021. From powdered milk xxxx

5081 NI (Kominami)-NK3022. From "Umezu" xxxx

5518 NI (Kominami)-M198. From "Umeboshi" xxxx

*Aspergillus janus* Raper et Thom

5517 NI (Tsubaki) T286-9. From soil xxxx

5562 CBS; NCTC 1951

*Aspergillus japonicus* Saito

5082 OUT-129; CLMR-62 (Saito). Steril xxxx

5083 NI (Nehira)-B9(2) "Kurome Komugi" xxxx

5084 NI (Nehira)-B12(3). From the soil of Caroline Islands xxxx

5085 & 5086 NI (Nehira). Strains B39(4) & B58(5) xxxx

5087 NI (Nehira)-923; NIK (Saito) xxxx

5411 NI (Kominami)-Cot. 8. From cotton fibre xxxx

5412 BATU (Kominami)-E324-1. From forest soil xxxx

5413 BATU (Kominami)-L2285-2 From air xxxx

5414 BATU (Kominami)-L2475-1; ACTU (Sakaguchi) xxxx

5529 FES (Kawada). A-32. From forest soil xxxx

*Aspergillus kanagawaensis* Nehira

5581 NSM (Kobayasi), originated from Nehira. From soil 1951

*Aspergillus katsuobushi* (nec Nakazawa et al.)

5088 (Probably Asp. ochraceus) Yamazaki, originated from ACTU (Sakaguchi) xxxx

*Aspergillus Kawachii* Kitahara

5547 IFSK (Kitahara). Mutant strain from Asp. Awamori 1950

*Aspergillus luchuensis* Inui

5507 ACTU (Iizuka) BL-4-9 xxxx

*Aspergillus Mangini* (Mangin) Thom et Raper

5552 NI (Tsubaki) T438-1. From air 1951

*Aspergillus melleus* Yukawa

5090 OUT-131; CLMR-65; GIB (Yukawa) xxxx

5516 UCA (Yamazaki); ACTU xxxx

*Aspergillus minimus* Wehmer

5091 OUT-132; CLMR-66; ACTU xxxx

5092 OUT-133; CLMR-67; HUA xxxx

*Aspergillus miyakoensis* Nakazawa, Simo et Watanabe

5508 ACTU (Iizuka) xxxx

*Aspergillus mollis* Bainier et Sartory

5093 OUT-134; CLMR-68; HUA xxxx

*Aspergillus Nakazawai* Sakaguchi, Iizuka et Yamazaki

5509 ACTU (Iizuka) Strain (10)4133 xxxx

*Aspergillus nidulans* (Eidam) Winter

5094 OUT-135; CLMR-69; USDA (Thom) xxxx

5095 OUT-136; CLMR-67; HUA-A1000; ATCC xxxx

5096 NI (Nehira)-186. From the bark of cinnamon xxxx

5097 NI (Nehira)-308. From air xxxx

5098 NI (Nehira)-752. From soil xxxx

5099, 5100, 5101, 5102 & 5103 NI (Nehira). Strains N1, N2, N3, N4 & N5. xxxx

5392 BATU (Kominami)-E597-B. From soil xxxx

5393 BATU (Kominami)-L1079-1. From mouldy binocular lens xxxx

5394 BATU (Kominami)-L577-3. From air xxxx

5395 BATU (Kominami)-L1695. From air xxxx

5096 BATU (Kominami)-L1697. From air xxxx

5397 BATU (Kominami)-L1893-B3. From the prism of binocular xxxx

5398 BATU (Kominami)-E597. From soil xxxx

5474 NI (Tsubaki)T188-1. From soil xxxx

*Aspergillus nidulans* mut. *albus* Yuill (sic *alba* Yuill)

5563 CBS (E. Yuill) 1951

*Aspergillus niger* van Tieghem

5104 & 5108 NI (Nehira)-B6; OUT-140; OHTS xxxx

5105 & 5109 NI (Nehira)-B7; OUT-139 (Saito). From tobacco xxxx

5106 & 5110 NI (Nehira)-B8; OUT-138; CLMR-73; ATCC xxxx

5107 NI (Nehira)-B3; OUT-108; CLMR-36 (Naganishi) (*Aspergillus Batatae*) xxxx

5111 NI (Nehira)-B-10. From candied ginger xxxx

5112 NI (Nehira)-B-11. From orange peelings xxxx

5113 NI (Nehira)-B-13. From soil of Caroline Islands xxxx

5114 NI (Nehira)-B-14. From seed of *Hydnocarpus alpina* xxxx

5115 NI (Nehira)-B-15. From vanilla xxxx

5116, 5117, 5118, 5119, 5120, 5121 & 5122 NI (Nehira) Strains B36=Km1, B38=Km3, B40=Km46, B43=Km41, B44=Km42, B45=Km43 & B47=Km45 xxxx

5123 NI (Nehira) B60 (Asp. pulverulentus NI No. 5311) xxxx

5124, 5125, 5126, 5127, 5128, 5129, 5130, 5131, 5132, 5133, 5134 NI (Nehira) xxxx

5135 NI (Nehira)–67 From the root of chinese *Ophiopogon* xxxx

5136 NI (Nehira)–71 xxxx

5137 NI (Nehira)–98. From soil of Caroline Islands xxxx

5138 NI (Nehira)–101. From mangrove xxxx

5139 NI (Nehira)–187. From the seed of *Hydnocarpus alpina* xxxx

5140 NI (Nehira)–188. From vanilla xxxx

5141 NI (Nehira)–285. From soil xxxx

5142 NI (Nehira)–537. From root of a tree xxxx

5143 NI (Nehira)–546. From soil xxxx

5144 NI (Nehira)–547. From bottled vegetables xxxx

5145 NI (Nehira)–751; NIK (Saito) xxxx

5146 NI (Nehira)–860. From dried herring xxxx

5147 NI (Nehira)–865. From cake xxxx

5148 NI (Nehira)–938. From the ceiling of Koji-room xxxx

5149 NI (Nehira)–1017. From aluminum-foil xxxx

5150 NI (Nehira)–1049. From soil xxxx

5151 NI (Nehira) Km7 xxxx

5406 & 5408 BATU (Kominami) Strains L212–3 & L1996–2. From air xxxx

5407 BATU (Kominami) Strain L1536–1 From mouldy binocular lens xxxx

5409 BATU (Kominami) Strain E157. From forest soil xxxx

5410 NI (Kominami) Strain NK3016. From wheat flour xxxx

5528 FES (Kawada) A–39. From forest soil 1950

5577 NI (Saito). From "Inekoji" 1951

5584 Research Laboratories of Merck Co., Rahway, N.J. (Dr. Stoudt), Strain No. 51R4163; Dr. Starkey's Laboratory at Rutgers Univ.; originated from Prof. Niklas of Germany. For assay of potassium and phosphorous in soil 1951

Syn. *Aspergillus Batatae* Saito (Lit.: Z. f. Bakt. II, *18*, 34, 1907)

5027 OUT–108; CLMR–36 (Naganishi) xxxx

*Aspergillus niger* mut. *cinnamomeus* (Schiemann) Thom et Raper

Syn.: *Aspergillus cinnamomeus* Schiemann

5538 IFO Strain A–23; USDA (Thom) 1950

*Aspergillus niger* mut. *schiemanni* (Schiemann) Thom et Raper

Syn.: *Aspergillus Schiemanni* (Schiemann) Thom

5542 IFO Strain A–103; CBS (Schiemann) 1950

Syn.: *Aspergillus fuscus* Schiemann

5532 Sanraku Co. Strain A4–5; ACTU (Sakaguchi) 1950

*Aspergillus niveus* Blochwitz

5545 IFO Strain A–140; CBS 1951

*Aspergillus ochraceus* Wilhelm

5152 OUT–141; ACTU; CBS xxxx

5153 OUT–142; OHTS xxxx

5155 OUT–144 (Saito). From rice-embryo xxxx

5156 OUT–165; FAES xxxx

5157 NI (Nehira)–Km9 xxxx

5158 NI (Nehira)–Km10 xxxx

5159 NI (Nehira)–51. From fruit of quince xxxx

5160 NI (Neeira)–868. From soil xxxx

5161 NIK (Saito)–927 xxxx

5162 NI (Nehira)–957. From soil xxxx

5163 NI (Nehira)–1036 xxxx

5306 NI (Nehira)–Km27 xxxx

5475 NI (Tsubaki)–T170–1. From soil xxxx

*Aspergillus ochraceus* var. *microsporus* Tiraboschi (sic *microspora* Tiraboschi in Thom et Raper)

5530 FES (Kawada) A–33 From soil 1950

5531 FES (Kawada) A–34 (f. *floccosus*). From soil 1950

*Aspergillus Okazakii* Yagi et al. See Asp. candidus xxxx

*Aspergillus oligosporus* Corda

5164 OUT–166; CLMR–77; GIB. Probably *A. oryzae.* xxxx

*Aspergillus Oryzae* (Ahlb.) Cohn

5165, 5166, 5167 & 5168 OUT (Saito) Strains 147, 148, 149 & 150; CLMR (Naganishi) Strains 85(1), 86(2), 87(3) & 88(4). From Kauliangchiu xxxx

5170 OUT (Saito) Strain 157. Production of kojic acid xxxx

5171 & 5172 OUT (Saito) Strains 162 & 163; Shoyu Exp. Sta. Kagawa Pref. Strain No. 3 & No. y xxxx

5173 & 5174 OUT (Saito) Strains 154 & 156, Shodoshima a & b xxxx

5175 OUT (Saito) Strain 161, Kikkoman-Shin xxxx

5176 OUT (Saito) No. 156; CLMR (Saito); GIB Strain "Higeta" xxxx

5177 OUT (Saito) No. 152. Higuchi Sake-Koji xxxx

5178 OUT (Saito) No. 146. Higuchi Sake-Koji-Shin xxxx

5179 OUT (Saito) Strain 158; CLMR-82; GIB Strain Kawamori Nô xxxx
5180 OUT (Saito) Strain 159; CLMR-81; GIB Strain Kawamor Tan xxxx
5181 OUT (Saito) Strain 151 "Kokuhen" xxxx
5182 OUT (Saito) Strain 153 "Fugu 1" xxxx
5183 HHTS (Naganishi). From Hainan Island xxxx
5184, 5185, 5186, 5187, 5188, 5189 & 5190 NI (Nehira) Strains 9, 7, Km11, Km12, Km13, Km14 & Km15 xxxx
5191, 5192, 5193, 5194, 5195, 5196 & 5197 NI (Nehira) Strains Km17, Km18, Km19, Km21, Km25, Km26 & Km28 xxxx
5198 NI (Nehira) Strain 66. From roots of Chinese *Ophiopogon* "Bakumonto" xxxx
5199, 5200, 5201, 5202, 5203, 5204, 5205 & 5206 NI (Nehira) Strains Km81, Km82, Km83, Km84, Km85, Km86, Km87 & Km88 xxxx
5207, 5208, 5209, 5210, 5211, 5212 & 5213 NI (Nehira) Strains Km89, Km90, Km91, Km92, Km93, Km94 & Km95 xxxx
5214, 5215, 5216, 5217, 5218, 5219, 5220, 5221 & 5222 NI (Nehira) Strains Km96a, Km96b, Km97, Km98, Km113, Km114, Km115, Km116 & Km117 xxxx
5223, 5224, 5225, 5226, 5227, 5228, 5229, 5230, 5231 & 5232 NI (Nehira) Strains Km118, Km119, Km120, Km122, Km123, Km124, Km125, Km126, Km127 & Km128 xxxx
5233 NI (Nehira) Strain 166. From soil of Kanazawa xxxx
5234 NI (Nehira) Strain 189. From *Hydnocarpus alpina* xxxx
5235 NI (Nehira) Strain 190. From "Kardamon" xxxx
5236 NI (Nehira) Strain 215. Isolated Dr. by Momose xxxx
5237 NI (Nehira) Strain 223, From Shoyu Tanekoji xxxx
5238 NI (Nehira) Stroin 224. From Misokoji xxxx
5239 & 5240 NI (Nehira) Strains 307 & 340 From air xxxx
5241 NI (Nehira) Strain 418. From Micronesia xxxx
5242 NI (Nehira) Strain 535. From dried herring xxxx
5243 NI (Nehira) Strain 555. From soil xxxx
5244 NI (Nehira) Strain 763. From Mochi xxxx
5242 NI (Nehira) Strain 847. From soil xxxx
5246 NI (Nehira) Strain 861. From dried herring xxxx
5247 & 5248 NI (Nehira) Strains 862 & 864. From Wakamoto cake xxxx
5249 NI (Nehira) Strain 867. From sweet potatoe xxxx
5250 & 5251 NI (Nehira) Strains 870 & 871. From air xxxx
5252 NI (Nehira) Strain 873. From mouldy melon xxxx

5263 NI (Nehira) Strain 885. From sweet potatoe xxxx
5264 & 5265 NI (Nehira) Strains 895 & 896. From wolnuts xxxx
6256 & 6257 NI (Nehira) Strains 897 & 898. From-powdered tea xxxx
5258 NI (Nehira) Strain 900. From Amazake-koji xxxx
5259 NI (Nehira) Strain 904. From bread-yeast xxxx
5260 NI (Nehira) Strain 913. From chease xxxx
5261 NI (Nehira) Strain 914. From butter xxxx
5262 NI (Nehira) Strain 916. From Ume-juice xxxx
5263 NI (Nehira) Strain 919. From air ink-stick xxxx
5264 NI (Nehira) Strain 932; NIK (Saito) xxxx
5265 NI (Nehira) Strain 939. From The ceiling of Koji-room xxxx
5266 NI (Nehira) Strain 942. From soil. xxxx
5267 NI (Nehira) Strain 955. From aluminum-foil xxxx
5268 NI (Nehira) Strain 962. From Amazake-moto xxxx
5269 NI (Nehira) Strain 965. From soil xxxx
5270 NI (Nehira) Strain 972. From Miso-koji xxxx
5271 NI (Nehira) Strain 973. xxxx
5272 NI (Nehira) Strain 975. xxxx
5273 NI (Nehira) Strain 977. From soil xxxx
5274 NI (Nehira) Strain 987. From Kakiyôkan xxxx
5275 & 5276 NI (Nehira) Strains 1014 and 1015. From soil xxxx
5277 NI (Nehira) Strain 1019; NIN (Inoue). From Miso-moyashi xxxx
5278 NI (Nehira) Strain 1020; NIN (Inoue). From Shochu-moyashi xxxx
5279 NI (Nehira) Strain 1021; NIN (Inoue). From Tamarimiso-moyashi xxxx
5280 NI (Nehira) Strain 1022; NIN (Inoue). From Amazake-Koji xxxx
5281 NI (Nehira) Strain 1023; NIN (Inoue). From Amazake-Koji xxxx
5282 NI (Nehira) Strain 1024; NIN (Inoue); ACTU (Sakaguchi) Strain Miso A (0–1–1) xxxx
5283 NI (Nehira) Strain 1025; NIN (Inoue); ACTU (Sakaguchi) Strain Miso B (0–1–2) xxxx
5285 NI (Nehira) Strain 1027; NIN (Inoue); ACTU (Sakaguchi) Strain Miso D (0–1–4) xxxx
5481 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Miso D (0–1–4) xxxx
5486 NI (Nehira) Strain 1028; NIN (Inoue); ACTU (Sakaguchi) Strain Miso E (0–1–5) xxxx
5479 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Miso

E (0–1–5) xxxx

5288 NI (Nehira); ACTU (Sakaguchi) Starin 1035 xxxx

5289 NI (Nehira) Strain 1043. From cod-liver oil xxxx

5290, 5291, 5292, 5293 & 5294 NI (Nehira) Strains 1044, 1045, 1048, 1053, 1056 From soil xxxx

5295 NI (Nehira) Strain 1058 From Biofermin xxxx

5296 and 5297 NI (Nehira) Strains 1063 & 1064. From soil xxxx

5298, 5299 & 5300 NI (Nehira) Strains 1069, 1070 & 1071. From Higuchi Moyashi xxxx

5302 NI (Nehira) Strain 1073; NI (Ohashi) Kome-Koji xxxx

5302 NI (Nehira) Strain 1075. From soil xxxx

5303 NI (Nehira) Strain 1077. xxxx

5304 NI (Nehira) Strain 1084. Frsm soil xxxx

5484 NI (Kominami); NIN (Inoue); ACTU (Sakagucei) Strain Miso Korea B (0–8–1) Production of riboflavine xxxx

5485 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Sake 1–2 (0–9–5) xxxx

5486 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Sake H–2–6 (0–7–7) xxxx

5487 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Sake 111–2 (OH–324) xxxx

5488 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Sake 112 (OH–329) xxxx

5489 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Shimura. Production of Amylase ane Protease xxxx

5578 NI (K. Saito) From "Inekoji" 1951

*Aspergillus Opyzae* var. *globosus* Sakaguchi et Yamada (Lit.: Jour. Agric. Chem. Soc. *20.* p. 141, 1944)

5483 NIN (Inoue); ACTU (Sakaguchi) Strain MIso (0–13–9) SH–10–5 xxxx

*Aspergillus Oryzae* var. *microsporus* Sakaguchi et Yamada (Lit.: Sakaguchi et Yamada (1944) ibid.) xxxx

5284 NI (Nehira) Strain 1026; ACTU (Sakaguchi) Strain Miso C (0–1–3) xxxx

5287 NI (Nehira) Strain 1029; NIN (Inoue); ACTU (Sakaguchi) Strain Miso F (0–1–6) xxxx

5480 NI (Kominami); NIN (Inoue); ACTU (Sakaguchi) Strain Miso F (0–1–6) xxxx

*Aspergillus Oryzae* var. *microsporus* f. *flavo-viridis* Ohmasa, Kawada et

Nagashima xxxx

5525 FES (Kawada) Strain a–29(6) From forest soil xxxx

*Aspergillus Oryzae* var. *microsporus* f. *flavescens* Ohmasa, Kawada et Nagashima

5526 FES (Kawada) Strain a–30(7) From forest soil 1950

*Aspergillus Oryzae* var. *pseudoflavus* (Saito) Ohara

5585 AGU (Ohara) Strain 256 (KK3–1) 1951

*Aspergillus Oryzae* var. *sporoflavus* Ohara

5587 AGU (Ohara) Strain 285 (MM 1–1) 1951

*Aspergillus Oryzae* var. *wehmeri* (C. et L.) Ohara)

5586 AGU (Ohara) Strain 273 (KM1–1) 1951

*Aspergillus Oryzae* var.

5582 Higuchi Co. Laboratory (Matsuyama) 1951

*Aspergillus ostianus* Wehmer

5305 OUT–167; CLMR–90; ACTU xxxx

*Aspergillus panamensis* Raper et Thom

5564 CBS; NCTC 1951

*Aspergillus parositicus* Speare

5307 OUT–168; CLMR–91; NCTC xxxx

*Aspergillus penicilloides* Spegazzini

5565 CBS (Church) 1951

*Aspergsllus penicillopsis* (Hennings) Raciborski

5508 OUT–169; CLMR–94; HU (K. Ōshima) xxxx

*Aspergillus periconioides* Saccardo

5309 OUT–Aspergillus sp. No. 11 xxxx

*Aspergilllus phoenicis* (Cda.) Thom

5566 CBS; ATCC Strain 363 1951

*Aspergillus profusus* Hann (nomen nudum) See A. pseudoglaucus

*Aspergillus proliferans* G. Smith

5567 CBS (G. Smith) 1951

*Aspergillus pseudoflavus* Saito

5310 OUT–170; CLMR–95; (Blochwitz) xxxx

*Aspergillus pseudoglaucus* Blochwitz

5568 CBS (Blochwitz) 1951

Syn.: *Aspepgillus profusus* Hann (nomen nudum)

5546 IFO A–159; CBS 1950

*Aspergillus pulverulentus* (McAlpine) Thom

5311 OUT–171; CLMR–97; HU (K. Oshima) xxxx

*Aspergillus quadrilineatus* Thom et Raper
5569 CBS (Wintzki) 1951
*Aspergillus quercinus* (Bainier) Thom et Church
5539 IFO A–96; (Thom) 1950
5540 IFO A–526 (Hasegawa) 1950
*Aspergillus Rehmii* Zukal
5312 OUT–172; CLMR–99; Blochwitz xxxx
5313 OUT–174; CLMR–100; HU xxxx
5314 OUT–173 (Saito) From rice-embryo xxxx
*Aspergillus repens* (Corda) de Bary
5315 OUT–175; CLMR–101; ACTU xxxx
5513 NI (Tsubaki) T317–1. From cacao xxxx
*Aspergillus restrictus* G. Smith
5570 CBS (Boedijn-Reitsma) 1951
*Aspergillus ruber* (Spieckermann et Bremer) Thom et Church
5541 IFO (Sato) A–101; CRIGF (Nakazawa). From tobacco 1950
5553 NI (Tsubaki) T418–2. From mosquito incence sticks 1951
*Aspergillus rugulosus* Thom et Raper
5571 CBS (Cain) 1951
*Aspergillus Saitoi* Sakaguchi, Iizuka et Yamazaki
5510 ACTU (Iizuka) Strain (3)6711 xxxx
*Aspergillus Schiemanni* (Schiemann) Thom. See Asp. niger mut. Schiemannii (Schiemann) Thom et Raper
*Aspergillus sclerotiorum* Huber
5572 CBS (Huber) 1951
*Aspesgillus sojae* Sakaguchi, et Yamada (Lit.: Jour. Agric. Chem. Soc. Japan *20*, 141, 1944)
5482 NIN (Inoue); ACTU (Sakaguchi) Strain SH10–1 (0–13–8) xxxx
5595 ACTU (Sakaguchi) Strain SH10–1 (0–13–8). Production of Kojic acid 1952
5596 ACTU (Sakaguchi) Strain SH26 (0–15–7). Production of Kojic acid 1952
*Aspergillus sojae* Sakaguchi et Yamada f. *flavo-viridis* Ohmasa, Kawada et Nagashima
5524 FES (Kawada) Strain A–28. From forest soil 1950
*Aspergillus sparsus* Raper et Thom
5573 CBS; NCTC 1951
*Aspergillus sulphureus* (Fres.) Thom

5156 OUT (Saito) Strain 165; Fukuoka Agr. Exp. Sta. xxxx
5316 OUT (Saito) 176; CLMR (Saito); OHTS xxxx
5317 NI (Nehira) 192. From cinnamon bark xxxx
5514 NI (Kominami) Strain M81–4 From "Name-miso" xxxx

*Aspergillus Sydowi* (Bain. et Sart.) Thom et Church (Sterigmatocystis Sydowi Bainier et Sartory)

5318 OUT (Saito)–177; CLMR (Saito)–103; HU (Ohshima) xxxx
5319, 5320, 5321 & 5322 NI (Nehira) Strains S1, S2, S3 & S4 xxxx
5323 NI (Nehira) Strain 225. From seeds of *Cassia torosa*. Production of ergosterol xxxx
5324 NI (Nehira) Strain 226a. From "Denbu" xxxx
5325 NI (Nehira) Strain 642. From dried cuttle-fish. Production of ergosterol xxxx
5326 NI (Nehira) Strain 934; NIK (Saito) xxxx
5370, 5371, 5372, 5373, 5374, 5375, 5376 5377 NI (Kominami) from air xxxx
5523 FES (Kawada) Strain A–25. From forest soil 1950

*Aspergillus Sydowi* var. *inequalis* Nakazawa, Takeda et Suematsu

5548 IFO (Sato) A. 117; CRIGF (Nakazawa) 1950

*Aspergillus tabocinus* Nakazawa, Takeda et Simo

5543 IFO A–118; CRIGF (Nakazawa) From tobacco 1950

*Aspergillus Tamarii* Kita

5327 OUT–178; CLMR–104; HU–Al005; ATCC xxxx
5328 OUT–179; CLMR–105 (Naganishi). From dried Chinese persimmon xxxx
5329 NI (Nehira) Strain 194. From cinnammon bark xxxx
5330 NI (Nehira) Strain 222. From "Marumasu Kogane Kin" xxxx
5531 NI (Nehira) Strain 1030; NI (Inoue). From "Miso-koji" xxxx
5332 NI (Nehira) Strain Km10 xxxx
5333 NI (Nehira) Strain Km16

*Aspergillus terreus* Thom

5334 NI (Nehira) Strain 102. From Ponapean coconut xxxx
5335 NI (Nehira) Strain 149. From seeds of *Hydnocarpus* xxxx
5336 NI (Nehira) Strain VI. (*A. varians ?*) xxxx
5378, 5379, 5380, 5381, 5382, 5383, 5384, 5385, 5386 & 5387 NI (Kominami). From cotton fibre xxxx
5399 NI (Kominami). From wheat flour xxxx
5400 NI (Kominami). From a flower of herbacious peony xxxx
5583 Research Laboratories of Merck & Co., Inc., Rahway, N. J.

(Dr. Stoudt) Strain Mf191, 51R4162; NRRL–265. Production of itaconic acid 1951

*Aspergillus terricola* Marchal var. *americana* Marchal

5337 OUT–180; CLMR–106; ACTU xxxx

*Aspergillus umbrosus* Bainier et Sartory

5574 CBS (Raper) 1951

*Aspergillus unguis* (Emilr-Weil et Gaudin) Thom et Raper

5575 CBS Strain YR6054. 1951

*Aspergillus Usamii* Sakaguchi, Iizuka et Yamazaki

5476, 5477, 5478 TAC (Suminoe); ACTU xxxx

5511 ACTU (Iizuka) Strain (1)0635 xxxx

*Aspergillus ustus* (Bainier) Thom et Church

5512 ACTU (Iizuka) Strain A–10–4 xxxx

5519 NI (Tsubaki) Strain 370–1. From soil xxxx

5527 FES (Kawada) Strain A–30. From forest soil 1950

*Aspergillus varians* Wehmer

5538 OUT (Saito)–181; CLMR–107; ACTU xxxx

*Aspergillus variecolor* (Berk. et Br.) Thom et Raper

(Syn. Emericella variecolor Berk. et Br.)

5576 CBS (Verona) 1951

*Aspergillus versicolor* (Vuill.) Tiraboschi

5339 OUT (Saito)–182; CLMR–108; HU (K. Ohshima) xxxx

5340 NI (Nehira)–64. From the flower of *Petasites japonicus* xxxx

5341 NI (Nehira)–68. From roots of Korean *Ophiopogon* xxxx

5342 NI (Nehira)–72. From rhizome of Chinese *Rheum* xxxx

5343 NI (Nehira)–81. From "Neri-yokan" xxxx

5344, 5345 & 5346 NI (Nehira) Strains 182, 193 & 184 from *Taraktogenos Kurzii* xxxx

5347 NI (Nehira)–204. From flour of Soya-beans xxxx

5348 NI (Nehira)–419. From air xxxx

5349 NI (Nehira)–553. From starch paste xxxx

5350, 5351 & 5352 NI (Nehira) Strains 554, 568 & 643. From soils xxxx

5353 NI (Nehira)–763. From "Mochi" xxxx

5354 NI (Nehira)–894. From wolnut xxxx

5355, 5356, 5357 & 5359 NIK (Saito) Strains 928, 929, 930 & 936 xxxx

5360, 5363 & 5364 NI (Nehira) Strains 1011, 1050 & 1067 from soils

5360 & 5362 NI (Nehira) Strains 1038 & 1042 from air xxxx

5429, 5430, 5431, 5432, 5434, 5435 & 5436 BATU(Kominami) Strains

L723–1, L1661, L723–3, L1336, L1942–1, L1962–2 & L732. From air

5433 BATU (Kominami) Strain L1693A–3. From mouldy lens xxxx

5437 NI (Kominami). From wheat-flour xxxx

5438 NI (Kominami). From cotton fibre xxxx

5362 NI (Kominami). From air xxxx

*Aspergillus violaceo-fuscus* Gasperini

5544 IFO (Sato) Strain A–133; CBS 1950

*Aspergillus Wentii* Wehmer

5365 OUT (Saito) 183; CLMR (Naganishi)–110. From air xxxx

5366 HHTS (Naganishi). From Hainan Island xxxx

5367 NI (Nehira) Strain 181. From seed of *Taraktogenos Kurzii* xxxx

5415 BATU (Kominami) Strain L2580–1; ACTU (Sakaguchi) xxxx

*Atelosaccharomyces Hudeloi* de Beurmann et Gougerot. See Debaryomyces Kloeckeri var. Hudeloi

*Auricularia auricula-judae* (Fr.) Schröter

3066 CBS (Barnett) Strain 105 xxxx

3067 CBS (Barnett) Strain 112 not bacteria-free 1951

*Bacillus aporrhoeus* Fuller et Norman (Lit.: J. Bact. *46*, 1943, p. 277) 1951

8096 BSTU (A. Kurihara); ATCC, through Pennsylvania Univ. Decompose cellulose 1952

*Bacillus circulans* Jordan

8097 BATU (A. Kurihara); ATCC, through Pennsylvania Univ. 1952

*Bacillus megatherium* de Bary

8100 NIH (Okami); NRRL Strain B–938. Production vitamin $B_{12}$ 1952

*Bacillus sphaericus* Neide

8099 BSTU (A. Kurihara); ATCC, through Pennsylvania Univ. 1952

*Bacillus sphaericus* var. *rotans* (Roberts) Smith, Gordon et Clark

Syn. *Bacillus rotans* Roberts

9098 BSTU (A. Kurihara); ATCC, through Pennsylvania Univ. 1952

*Blakeslea trispora* Thaxter

1245 CBS Strain (+)–ve 1951

1246 CBS Strain (−)–ve 1951

*Blastomyces brasiliensis* (Splendore) Conant et Howell

4201 406th Medical General Laboratory (P. Liu); 3rd Army Area Laboratory; Duke University (Conant) 1952

*Blastomyces dermatitidis* Gilchrist et Stokes

4202 406th MGL. (p. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Botryoconis japonica* Saito

4010 OUT (Saito) xxxx

*Botryoconis sanguinea* Tubaki

4197 NI (Tubaki) T487–1. From soil of Chiba Pref. 1951

*Botryosphaeria ribis chromogena* G. et D.

4181 IFO–PL. 11; HHTC (Naganishi); CLMR–113 (Saito); CBS (Stevens) 1952

*Botrytis reptans* Bonorden

4170 NI (Tubaki) T284–2. From soil 1950

*Bullera alba* (Hanna) Derx (Syn.: Sporobolomyces albus Hanna)

7489 CBSY (Buller) 1951

*Byssochlamys fulva* Oliver et Smith

2065 CBS (Raper) 1951

*Calocera cornea* (Batsch) Fr.

3068 CBS Strain AB 1951

3069 CBS Strain Ab 1951

6070 CBS Strain aB 1951

3071 CBS Strain ab 1951

*Calvatia craniformis* (Schw.) Fr. (Jap. name: Nôtake)

3086 NI (Tsubaki). From Natural Garden, Meguro 1951

*Calvatia lilacina* Berk by Kawamura. (Jap. name: Sakechidome)

3087 NI (Kobayasi and Tubaki) From Asakawa 1951

*Candida albicans* (Robin) Berkhout (Syn. Oidium albicans Robin)

7491 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

Syn. *Endomyces albicans* Vuillemin (Endomycopsis albicans)

x7077 CBS Syn

Syn. *Monilia albicans* (Robin) Zopf

4164 NI (Tubaki). From moniliasis patient xxxx

Syn. *Oidium albicans* Robin

7078 IIPB (Okunuki); Univ. of Illinois xxxx

*Candida Guilliermondii* (A. Cast) Langeron et Guerra (Lit.: Diddens and Lodder, 1942. pp. 246—265, 262)

Syn. *Torula fermentati* Saito

7335 OUT–582; CLMR–244 (Naganishi). From air

*Candida japonica* Diddens et Lodder (Lit.: Diddens & Lodder, 1942. p. 486)

Syn. *Torulopsis albus* Saito et Oda

7350 OUT–596 (CI–4) (Saito & Oda). From Sake-Moto of Kiku-Masamune xxxx

*Candida Krusei* (Cast.) Berkhout

7492 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

Syn. *Mycoderma Bordetii* Kufferath (sic M. Bordeti Kufferath)

7150 OUT–605; CLMR–84; CBS (Kufferath) xxxx

Syn. *Mycoderma Chevalieri* Guilliermond (Lit.: Diddens & Lodder 1942, p. 189)

7151 OUT–606; CLMR–91; (Guilliermond) xxxx

Syn. *Mycoderma monosun* Anderson

7598 IFO–Ca. 11; HHTC (Naganishi); Univ. of Illinois (Tanner) 1952

*Candida mesenterica* (Geiger) Diddens et Lodder

Syn. *Pseudomonilia mesenterica* Geiger

7600 IFO–Ca. 7; HHTC (Naganishi); CLMR–266; CBS (Schnegg) 1952

*Candida parakrusei* (Castellani et Chalmers) Carmago

7493 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Candida pseudotropicalis* (A. Cast.) Basgal

7494 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Candida pseudotropicalis* var. *lactosa* (Harrison) Diddens et Lodder

Syn. *Torula lactosa* Kluyver

7601 IFO–Ca. 5; HHTC (Naganishi); LM (Kluyver) 1952

*Candida pulcherrima* (Lindner) Windisch (Syn. Torulopsis pulcherrima (Lindner) Saccardo)

7477 Institute of Hygiene, Montevideo, Urguay (Juan E. Mackinnon) Strain 1016; CBS (Windisch) 1951

Syn. *Torula pulcherrima* Lindner

7475 Institute of Hygiene, Montevideo (J. E. Mackinnon) strain 859. From a winery 1951

7476 Institute of Hygiene, Montevideo (J. E. Mackinnon) strain 980; (Catharine Roberts) Strain C–10b. Normal pigmented type, derived from a single cell. 1951

*Candida rugosa* (Anderson) Diddens et Lodder

Syn. *Mycoderma rugos(um)* Anderson (sic M. rugosa Anderson)

7444 NI (Tubaki) T186–2 From flower of pumpkin xxxx

*Candida tropicalis* (A. Cast.) Berkhout (Syn. Candida vulgaris)

7495 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

Syn. *Monilia candida* (Bon.) Hansen

4075 OUT–(Saito)–254; CLMR (Saito) 174; GIB (Král) xxxx

4123 IIPB (Okunuki); HHTS (Naganishi); CLMR–174; GIB xxxx

4076 NI (Okunuki); University of Illinois

*Candida variabilis* (Lindner) Berkhout. See Sporotrichum Carougeaui

Langeron

*Candida vulgaris* (Schum.) Fries. See Candida tropicalis (A. Cast.) Berkhout

*Ceratostomella fimbriata* (Ell. et Halst.) Ell. See Ophiostoma fimbriata

*Cercosporina Kikuchii* Matsumoto et Tomoyasu

4190 NARI (H. Kurata) 1951

*Chaetocladium Brefeldii* v. Tieghem et Le Monnier

1234 CBS (Blakeslee) (+)-ve strain 1951

1235 CBS (Blakeslee) (−)-ve strain 1951

*Chaetomidium barbatum* Traaen

2066 CBS (Traaen) 1951

*Chaetomidium fimeti* Fuck

2067 CBS 1951

*Chaetomidium japonicum* Saito et Okazaki

2005 OUT (Saito) xxxx

*Chaetomidium sp.* Nishikawa

2006 TCAF (Nishikawa) xxxx

*Chlorella ellipsoidea* Gerneck

A002 TIBR (Tamiya); Univ. of Illinois (Gaffron) 1952

*Cladosarum olivaceum* E. Yuill (Probably monstrous form of Aspergillus niger)

5580 CBS (Yuill) 1951

*Cladosporium cellare* (Pers.) Schanderl (Syn. Rhacodium cellare)

4090 IFO Strain C1-4; CBS xxxx

*Cladosporium suaveolens* (Lindner) Delitsch

Syn. *Sachsia suaveolens* Lindner

4092 CBS xxxx

*Cladosporium Wernecki* Cerqueira Pinto

4203 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Claviceps microcephala* Wallr.

2072 IFO-PR-81; CBS; (Schnegg)

*Claviceps purpurea* (Fr.) Tulasne

2041 NHLT xxxx

*Claviceps virens* (Cke.) Sakurai (Jap. common Name: Inekojikin

2071 NI (Kobayasi and Tubaki) 1951

*Clostridium acetobutylicum* McCoy, Fred, Paterson et Hastings

8079 ATCC 10132; NRRL (Raper) B594. Production of acetone, butyl alcohol and ethyl alcohol 1951

8080 ATCC 4259; NCTC (St. John-Brooks) Strain 619; Strain T of McCoy and McClung 1951

8081 ATCC 824; Yale Univ. (E. R. Weyer) Strain W of McCoy and McClung. Production of p-aminobenzoic acid 1951

*Clostridium botulinum* (van Ermengem) Holland

Type A

8082 ATCC 7948; Georgetown Univ. (C. P. Hegerty); NCA Strain 62A 1951

Type B

8083 ATCC 7949; Georgetown Univ. (C. P. Hegerty); NCA Strain 213B 1951

*Cokeromyces recurvatus* Poitras

1226 University of Illinois (Prof. Shanor). (Lit.: Mycologia *42*, No. 2, p. 272, 1950) 1951

*Collybia cirrhata* Fr. var. *Cookei* Bresadora

3088 NI (Kobayasi) Sclerotium formation 1951

*Collybia velutipes* Fries (Jap. name: Enokitake)

3021 FES (Aoshima) xxxx

3055 TAC (Miyake) 1950

*Collybia radicata* (Fr.) Quélet (Jap. neme: Tsuetake)

3089 NI (Tubaki). From Natural Garden, Meguro 1951

*Conidiobolus* sp.

1236 NI (Saito) 1951

*Coprinus macrorhizus* Rea. f. *microsporus* Hongo (Jap. name: Ushiguso-hitoyo)

3090 NSM (Y. Kobayasi); Okayama Univ. (K. Kimura) Tetrapolar mixed 1951

*Coprinus micaceus* Fr. (Jap. neme; Kiraratake)

3091 NI (Tubaki) From Kitashinagawa, Tokyo 1951

*Cryptococcus neoformans* (Sanf.) Vuillemin. See Torulopsis neoformans

*Cryptococcus pararoseus* A. Castellani See Rhodotorula mucilaginosa var. rubrorugosa

*Cryptococcus rubrorugosus* A. Castellani See Rhodotorula mucilaginosa

*Ctenomyces pedis* (Ota) Langeron. See Trichophyton pedis Ota

*Cudonia circinans* Fr. (Jap. name: Hoteitake)

3092 NI (Tsubaki) From Karuizawa 1951

*Cunninghamella Blakesleeana* Lendner

1237 CBS (−)-ve Strain 1951

*Cunninghamella echinulata* (Matruchot) Thaxter comb. nov. (Oedocephalum echinulatum Thaxter) (Rhodora, *5*, p. 84 foot note, 1891)
1024–a IFO Cu–2; CBS. Strain (+)–ve 1951

*Curvularia tetramera* (Mckinney) Boedijn
4182 NI (Tubaki) T478–1. From soil 1950

*Daldinia concentrica* (Bolt.) Cés. et Not.
2052 NI (Tubaki) T343–1 1950

*Debaryomyces globosus* Klöcker
7447 IFO No. De–1; CBS 1950

*Debaryomyces gruetzii* Ota See Debaryomyces matruchoti Grigoraki et Péju strain gruetzii (Ota) Dekker

*Debaryomyces Hudeloi* (Beurm. et Goug.) da Fonseca See D. Kloekeri Guill. et Péju var. Hudeloi (de Beurm. et Goug.) Dekker

*Debaryomyces Kloeckeri* Guilliermond et Péju var. *Hudeloi* (de Beurm. et Goug.) Dekker (Syn. Atelosaccharomyces Hudeloi de Beurm. et Goug.) Syn. *Debaryomyces Hudeloi* (de Beurmann et Gougerot) da Fonseca
7449 IFO No. De–4; (M. Ota) 1950

*Debaryomyces Matruchoti* Grigoraki et Péju strain *Gruetzii* (Ota) Dekker Syn. *Debaryomyces Gruetzii* Ota
7448 IFO No. De 3; (M. Ota) 1950

*Dematium pullulans* de Bary et Löw See Pullularia pullulans=Anthostomella pullulans

*Dendryphium penicillatum* (Cda.) Fr. See Pyrenophora clavescens (Fr.) Sacc.

*Echinodontium tinctorium* Ell. et Ev.
3074 CBS (Mounce) 1951

*Echinodontium tsugicola* (P. Henn. et Shirai) Imazeki
(Syn. Hydnofomes tsugicola P. Hennings et Shirai)
3012 FES (Aoshima) xxxx

*Endomyces albicans* Vuillemin See Candida albicans (Robin) Berkhout

*Endomyces sp.*
7469 NI (K. Saito) from "Koji" 1951

*Endomycopsis albicans* (Vuillemin) Zopf See Candida albicans

*Endomycopsis vernalis* (Ludwig) Dekker
7471 ATCC 9331; NRRL (I. J. Wickerham) Strain Y–1357 1951

*Epidermophyton floccosum* (Harz) Langeron et Milochevitch
4204 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Euglena gracillis* Klebs var. *bacillaris* Pringsheim

A001 Sakaguchi Lab. ACTU (Sakai); ATCC Strain 10616; Haskins Lab. (L. Provasoli and S. N. Hunter) Assay of vitamin $B_{12}$ (Lit.: Proc. Soc. exp. Biol. & Med. 1948, *69*, 279) 1952

*Fistulina radicata* Schweinitz

3051 NI (Tubaki)–T384–1 1950

*Fomitiporia prunicola* Murr. See Fuscoporia prunicola

*Fuscoporia obliqua* (Pers.) Aoshima (Syn. Poria obliqua (Pers.) Bres.)

3036 FES (Aoshima) (Lit; Bull. Tokyo Univ. Forests, No. 3, March 1951, p. 185–207) xxxx

*Fuscoporia prunicola* (Murr.) Aoshima (Syn. Fomitiporia prunicola Murr.; Poria prunicola (Murr.) Sacc.)

3075 FES (Aoshima) Strain Pa4C. On *Prunus incisa*, Yamanashi Pref. June 1950. K. Aoshima (0514) (Lit.: The Government Forest Experiment Station Report No. 46, Dec. 1950, p. 160.)

*Ganoderma applanatum* (Pers.) Pat. (Jap. name: Kofukino-Sarunokoshi-kake)

3096 NI (Tubaki) From Natural Garden, Meguro 1951

*Geotrichum sp.*

4205 406th MGL (P. Liu) 1952

*Graphiola cylindrica* Y. Kobayasi

3110 NI (Y. Kobayasi) From leaf of *Livistona chinensis* 1952

*Graphium desmazieri* Saccardo

4183 NI (Tubaki) Strain T474–1. From soil 1951

*Guilliermondia fulvescens* Nadson et Konokotine. See Nadsonia fulvescens

*Hansenula anomala* (Hansen) Sydow

Syn. *Monilia javanica* Went et Prinsen Geerligs

7602 IFO–Ma. 21; CRIGF (Nakazawa); Hannover (Wehmer) 1952

*Haplographium chlorocephalum* (Fr.) Grove

4184 NI (Tubaki) Strain T481–2. From soil 1951

*Helicostylum piriforme* Bainier

1238 CBS (Blakeslee) Strain (+)–ve 1951

1240 NI (Tsubaki) Strain T467–1 (+)–ve 1951

1239 CBS (Blakeslee) Strain (−)–ve 1951

*Hemispora rugosa* (A. Cast.) Castellani et Chalmers See Trichosporon cutaneum

*Histoplasma capsulatum* Darling

4189 CBS; NCTC

4206 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1951

*Hormodendrum Pedrosoi* Prumpt

4207 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Hydnofomes tsugicola* P. Hennings et Shirai. See Echinodontium tsugicola (P. Henn. et Shirai) Imazeki

*Hypholoma appendiculatum* Quél. See Hypholoma stipatum (Fr.) Imai

*Hypholoma fasciculare* (Fr.) Quél. (Jap. name: Nigakuritake)

3093 NI (Kobayasi and Tsubaki). From Nippara 1951

*Hypholoma lateritium* (Fr.) Schröter (Jap. name; Kuritake)

3094 NI (Kobayasi and Tsubaki). From Nippara 1951

*Hypholoma stipatum* (Fr.) Imai (Hypholoma appendiculatum Quél.)

3095 NI (Kobayasi and Tsubaki). From Asakawa 1951

*Itersonilia pyriforme* Nyland

3063 University of California (Nyland) (Lit.: Mycologia *41*, No. 6, p. 689, 1949)

*Isaria Kogane* Hasegawa et Koyama

4072 FESIH (Hasegawa) xxxx

*Lampteromyces japonicus* (Kawamura) Singer. (Syn. Pleurotus japonicus)

3097 NI (Kobayasi). From Kamabuchi, Yamagata Pref. 1951

Syn. *Pleurotus japonicus* Kawamura

3031 FES (Aoshima) xxxx

*Lepiota procera* (Fr.) Quél. See Leucocoprinus procerus

*Leucocoprinus procerus* (Fr.) Singer (Syn. Lepiota procera) (Jap. common name: Karakasatake)

3098 NI (Kobayasi). From Ikaho, Gumma Pref. 1951

*Lycoperdon gemmatum* Batsch (Jap. name; Kitsuneno-chabukuro)

3099 NI (Kobayasi). From Kamabuchi, Yamagata Pref. 1951

*Margarinomyces* sp.?

4177 The Laboratory of Kirin Beer Co. 1951

*Microsporon*=*Microsporum*

*Microsporon ferrugineum* Ota. See Trichophyton ferrugineum

*Microsporum Audouini* Gruby

4209 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Microsporum canis* Bodin

4208 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Microsporum japonicum* Dohi et Kambayasi. See Trichophyton ferrugineum

*Monascus albidus* Sato

2064 IFO No. M. 32; CRIGF (Sato) 1950

*Monascus albidus* var. *glaber* Sato
2061 IFO No. M. 9; CRIGF (Sato) 1950
*Monascus Anka* Nakazawa et Simo var. *rubellus* Sato
2054 IFO No. M. 2; CRIGF (Sato) 1950
*Monascus araneosus* Sato
2057 IFO No. M. 5; CRIGF (Sato) 1950
*Monascus fuliginosus* Sato
2058 IFO No. M. 6; CRIGF (Sato) 1950
*Monascus major* Sato
2060 IFO No. M. 8; CRIGF (Sato) 1950
*Monascus pilosus* Sato
2055 IFO No. M. 3; CRIGF (Sato) 1950
*Monascus pubigerus* Sato
2056 IFO No. M. 4; CRIGF (Sato) 1950
*Monascus rubiginosus* Sato
2059 IFO No. M. 7; CRIGF (Sato) 1950
*Monascus serorubescens* Sato
2062 IFO No. M. 10; CRIGF (Sato) 1950
*Monascus vitreus* Sato
2063 IFO No. M. 11; CRIGF (Sato) 1950
*Monilia albicans* (Robin) Zopf. See Candida albicans
*Monilia candida* (Bon.) Hansen. See Candida tropicalis
*Monilia formosa* Sakaguchi, Inoue et Tada. See Paecilomyces varioti
*Monilia javanica* Went et Prinsen Geerligs. See Hansenula anomala
*Monilia variabilis* Lindner. See Candida variabilis
*Monilia* sp.
4185 NI (K. Sait) 1951
*Monosporium apiospermum* Saccardo
4210 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952
*Monotospora Daleae* Mason
4186 CBS (Dale) 1951
*Mortierella pusilla* var. *vinacea* Dixon-Stewart
1221 NI (Tsubaki) Strain T415–1 1950
*Mucor flavus* Bainier
1241 CBS (Claußen) Strain (+)-ve 1951
1242 CBS (Claußen) Strain (−)-ve 1951
*Mucor genevensis* Lendner
1217 NI (Tsubaki) Strain T408–2. From soil 1950

*Mucor Guilliermondii* Nadson et Philippow. See Mucor subtilissimus

*Mucor silvaticus* Hagem

1247 CBS (Claußen) Strain (+)-ve 1951

1248 CBS (Claußen) Strain (−)-ve 1951

*Mucor subtilissimus* Oudemans (Syn. M. Guilliermondii)

1218 NI (Tsubaki) Strain T407-2. From soil 1950

*Mycodrma Bordeti* Kufferath. See Candida Krusei

*Mycoderma Chevalieri* Guilliermond. See Candida Krusei

*Mycoderma rugosum* Anderson (Sic M. rugosa Anderson). See Candida rugosa

*Mycogone Jaapii* Lindau

4199 NI (Kobayasi and Tsubaki) From the fruit body of "Asetake"

*Mycotorula albicans* (Robin) Langeron et Talice. See Candida albicans

*Nadsonia fulvescens* (Nadson et Konokotine) Sydow (Syn. Guilliermondia fulvescens Nadson et Konokotine)

7472 ATCC 10645; NRRL (I. J. Wickerham) Strain Y-991 1951

*Nematospora gossypii* Ashby et Nowell. See Ashbya gossypii

*Neurospora sitophila* Shear et Dodge

Syn. *Neurospora sp.* Nehira

2031 NI (Nehira)-945. From Setagaya soil xxxx

*Neurospora crassa* Shear et Dodge

Syn. *Neurospora* sp. (Aoki)

2049 SES (Aoki) S69; Strain (A) 1950

2050 SES (Aoki) S109; Strain (a) 1950

2051 SES (Aoki) S89 and S109 mixed 1950

*Nigrospora Oryzae* (B. et Br.) Petch

4187 CBS 1951

*Nigrospora sphaerica* (Sacc.) Mason

4002 NI (Tsubaki) T700-1 1951

*Nocardia asteroides* (Eppinger) Blanchard

9083 406th MGL (Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Nocardia mexicana* Ota

9084 406th MGL (Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Nocardia* sp.

9085 406th MGL (P. Liu) 1952

*Oedocephalum coprophilum* Y. Kobayasi

4198 NSM (Kobayasi and Shimizu). From wild boar-dung, Mt. Kumotori 1951

*Oidium albicans* Vuillemin. See Candida albicans (Robin) Berkhout

*Oospora pullulans* (Lindner) Lindau. See Trichosporon pullulans

*Ophiobolus graminis* Saccardo

2070 NARI (H. Kurata) 1951

*Ophiostoma fimbriata* (Ell. et Halst.) Nannf.

Syn. *Ceratostomella fimbriata* (Ell. et Halst.) Ell.

2043 AES xxxx

*Paecilomyces varioti* Bainier

Syn. *Monilia formosa* Sakaguchi, Inoue et Tada

4078 ACTU (Sakaguchi) (Lit.: Zent. Bakt. Abt. II, *100*, pp. 302–307, 1939; Raper & Thom, Manual of the Penicillia p. 693, 1949) xxxx

Syn. *Penicillium divaricatum* Thom

6001, 6002 OUT (K. Saito) xxxx

Syn. *Penicillium viniferum* Sakaguchi et Inoue

6286 IFO No. p–21; ACTU (Sakaguchi) (Lit.: Z. Bakt. (II) *100*, pp. 302–307, 1939; Raper & Thom: Manual of the Penicillia p. 690, 1949) 1950

*Panellus stipticus* (Fr.) Singer (Syn. Panus stipticus Fr.) (Japanese common name: Wasabitake)

3100 NI (Kobayasi and Tsubaki). From Nippara 1951

3101 NI (Kobayasi) From Ikaho, Gumma Pref. 1951

*Panus stipticus* Fr. See Panellus stipticus

*Parasitella simplex* Bainier

1249 CBS (Blakeslee) Strain (+)–ve 1951

1250 CBS (Blakeslee) Strain (−)–ve 1951

*Parendomyces asteroides* Rischin. See Trichosporon cutaneum

*Penicillium albicans* Bainier

6289 NI (Tsubaki) Strain T350–1. From filter-paper 1951

*Penicillium cuprophilum* T. Sato. See P. ochro-chloron Biourge

*Penicillium divaricatum* Thom. See Paecilomyces varioti Bainier

*Penicillium luteum* Zukal

6291 NI (Tsubaki) Strain T20–3 1951

*Penicillium notatum* Westling

6288 NSM (T. Kondo) Albinistic mutant from P. 233 1951

*Penicillium ochro-chloron* Biourge

Syn. *Penicillium cuprophilum* T. Sato

6285 IFO P–19; ACTU (T. Sato) 1950

*Penicillium sclerotiorum* v. Beyma

6287 LSH (Raistrick), through Prof. S. Shibata) 1951

*Penicillium Thomii* Maire

6290 PI (Tsubaki) Strain T247–1 1951

*Penicillium viniferum* Sakaguchi et Inoue. See Paecilomyces varioti

*Pestalotia Diospiri* Sydow

4134 AES (Mukai) Strain 50; Saitama Agric. Exy. Sta. xxxx

*Pestalotia Populi-nigrae* Sawada et K. Ito

4140 FES (K. Ito) Type culture from *Populus nigra* L., Asamushi, Aomori Pref. xxxx

*Pestalotia* sp.

4039 CLMR (Naganishi)–258. From air. xxxx

*Pestalozzia* See Pestalotia

*Phialophora verrucosa* Thaxter

4211 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Pholiota nameko* (T. Ito) S. Ito et Imai

3030 FES (Nukumizu) xxxx

3056 TAC (Miyake) 1950

*Pholiota squarrosa* (Fr.) Quél. (Jap. common name: Sugitake)

3102 NI (Kobayasi) 1951

*Phycomyces Blakesleeanus* var. *piloboloides* Burgeff

1243 CBS (Burgeff) Strain (+)–ve 1951

1244 CBS (Burgeff) Strain (−)–ve 1951

*Piricularia Oryzae* Briosi et Cavara

4192 NARI 1138(P3) (Misawa) 1951

4193 NARI 1139(P4) (Ono) 1951

4194 NARI 1140(P5) (Shiino) 1951

4195 NARI 1141(P6) (Doi) 1951

*Pleurocybella porrigens* (Fr.) Singer (Syn. Pleurotus porrigens (Fr.) Quél.) Jap. name; Sugihiratake

3103 NI (Kobayasi and Tsubaki) From Nippara 1951

3104 NI (Kobayasi) From Kamabuchi, Yamagata Pref. 1951

*Polyporus betulinus* (Bull.) Fr. (Jap. name; Kanbatake)

3033 FES (Aoshima) xxxx

3108 NI (Tsubaki). From Mt. Tsubakuro, Nagano Pref. 1951

*Poria ambigua* Bresadora

3078 ATCC 9408, Pennsylvania State Coll. (J. W. Sinden); Overholts Collection. Strain 24674–R 1951

*Poria asiatica* (Pilat) Overholts

3079 ATCC 9410, Penn. State Coll. (J.W. Sinden); Overholts Collection.

Strain 24784 1951

*Poria incrassata* (Berk. et Curtis) Burt.

3080 ATCC 7770; USDA (R. W. Davidson) 1951

*Poria inermis* Ell. et Ev.

3081 ATCC 9412; Penn. State Coll. (J. W. Sinden); Ouerholts Collection. Strain 24798 1951

*Poria microspora* Overholts

3082 ATCC 9891; USDA (R. W. Davidson) Strain 575 1951

*Poria obliqua* (Persoon) Bresadora. See Fuscopria obliqua

*Poria prunicola* (Murr.) Sacc. See Fucsoporia prunicola

*Poria subacida* (Peck) Sacc.

3076 FES (Aoshima) Strain Pa23a. On *Tsuga diversifolia* 1951

*Poria Vaillantii* (DC.) Fries

3083 ATCC 11044, Findlay 14 strain of *P. vaillanti*, and came from Scotland via the U. S. Department of Agriculture. 1951

*Poria vaporaria* Persoon

3012 FES (Kitajima) xxxx

*Poria xantha* (Fr.) Cooke (Syn. Poria calcea var. xantha (Iind.) Bourd. et Galz)

3077 FES (Aoshima) Strain Pa21a. On *Abies firma.* 1951

*Poria zameriensis* (Pilat) Overholts

3084 ATCC 9409; Penn. State Coll. (J. W. Sinden); Overholts Collection. Strain 2476 5–R 1951

*Propionibacterium arabinosum* Hitchner

8084 ATCC 496; Univ. of Maine (E. R. Hitchner) 1951

*Propionibacterium freudenreichii* van Niel (Syn. Bacterium acidi propionici $\alpha$ Freudenreich et Orla-Jensen)

8085 ATCC 6027; Univ. of Maine (R. P. Tittsler); Univ. of Maine (E. R. Hitchner) 1951

*Propionibacterium jensenii* van Niel

8086, 8087 & 8088 ATCC Strains 4867, 4868 & 4869; Hopkins Marine Station (v. Niel) Strains 24, 29 & 1. 1951

*Pleurotus japonicus* Kawamura See Lampteromyces japonicus

*Pleurotus ostreatus* (Fr.) Quél. (Jap. name: Hiratake)

3032 FES (Nukumizu) xxxx

3105 NI (Kobayasi and Tsubaki). From Nippara 1951

*Pleurotus porrigens* (Fr.) Quél. See Pleurocybella Porrigens

*Pleurotus serotinus* (Fr.) Gillet. See Acanthocystis serotinus

*Propionibacterium rubrum* van Niel

8089 ATCC 4871; Hopkins Marine Sta. (van Niel) Strain 23 1951

*Propionibacterium shermanii* van Niel

8090 ATCC 9614; Univ. of Texas (R. J. Williams) Strain E. 11–1; (C. B. van Niel) 1951

8091 ATCC 8262; USDA (R. J. Tittsler) Strain 62 1951

*Propionibacterium zeae* Hitchner

8092 ATCC 4964; Univ. of Maine (E. Hitchner) 1951

*Psaliota campestris* (L.) Fries

3052 NIN; U. S. A. strain 1950

3053 NI (Tsubaki) Strain 412–1 1950

3072 Takata Mushroom Growing Co. (Kobayashi) Alasca strain 1951

3073 Takata Mushroom Growing Co. (Kobayashi) Strain Bohemia 1951

*Psathyrella disseminata* (Fr.) Quél. See Pseudocoprinus disseminatus

*Pseudocoprinus disseminatus* (Fr.) Singer (Syn. Psathyrella disseminata) Jap. common name; Inu-senbontake

3107 NI (Kobayasi and Tsubaki) From Nippara 1951

*Pseudomonas gelidicola* Kadota

8094 MAKU (Kadota). Agar-destorying marine bacterium. (Lit.: Memoir of the College of Agric., Kyoto Univ. *59* (1951) p. 60. 1951

*Pseudomonilia mesenterica* Geiger. See Candida mesenterica

*Pseudomonilia rubicundulus* Okunuki See Sporobolomyces rubicundulus

*Pullularia pullulans* (de Bary et Löw) Berkhout (=Anthostomella pullulans (de Bary et Löw) Bennet)

Syn. *Dematium pullulans* de Bary et Löw

4176 TAC No. 14 1950

*Pyrenophora clavescens* (Fr.) Sacc.

Syn. *Dendryphium penicillatum* (Cda.) Fr.

4036 OUT (Saito) strain 248; CLMR (Naganishi) strain 142. From air xxxx

*Rhacodium cellare* Persoon See Cladosporium cellare

*Rhizopus acetoinus* Kitahara et Fukui

1225 IFSK (Kitahara) Production of acetoin 1950

*Rhizopus achlamydosporus* Takeda

1219 IFO No. R-34; CRIGF (Takeda) 1950

*Rhizopus javanicus* Takeda

1224 TAC 1950

*Rhizopus microsporus* van Tieghem

1220 IFO No. R-33; CBS 1950

*Rhizopus Péka* I Takeda

1093 IFO R-93; CRIGF (Takeda) xxxx

*Rhizopus salebrosus* Yamazaki

1150-a IFO No. R. 66; NRRL Y. 1091 1951

*Rhizapus semarangensis* Takeda

1222 IFO R-42; CRIGF (Takeda) 1950

*Rhizopus trubini* Hanawa

1223 IFO R-49; CRIGF 6601 1950

*Rhodospirillum rubrum* (Esmarch) Molisch

8093 ATCC 9183; Univ. of Wisconsin (W. W. Umbreit). From Lake Mendota. Photosynthetic organism 1951

*Rhodotorula gracilis* Rennefelt

7490 IFO; NRRL, Y 1091 1951

*Rhodotorula mucilaginosa* (Jörg.) Harrison var. *pararosea* (A. Cast.) Lodder

Syn. *Cryptococcus pararoseus* A. Castellani

7445 IFO Cr-1 (M. Ota) 1950

*Rhodotorula mucilaginosa* (Jörg.) Harrison var. *rubrorugosa* (A. Cast.) Lodder

Syn. *Cryptococcus rubrorugosus* A. Castellani

7446 IFO Cr-2; (Ciferri) 1950

*Saccharomyces Batatae* Saito (Syn. S. cerevisiae Hansen Strain batatae)

*Saccharomyces cerevisiae* Hanson strain *batatae* (Saito) Dekker

Syn. *Saccharomyces Batatae* Saito

7450 IFO S-3; CLMR (Saito) 1950

*Saccharomyces Chevalieri* Guilliermond var. *torulosus* (Osterw.) Dekker (Syn. S. torulosus Osterwalder)

7451 IFO S-54; CBS (Guilliermond) 1950

*Saccharomyces Chodati* Steiner

7452 IFO S-55; CBS (Steiner) 1950

*Saccharomyces formosensis* Nakazawa

7453 IFO S-14; CRIGF (Nakazawa) 1950

*Saccharomyces globosus* Osterwalder

7454 IFO S-57; CBS (Osterwalder) 1950

*Saccharomyces Mangini* Guilliermond var. *tetrasporus* (Beij.) Dekker

7455 IFO S-62; CBS (Guilliemond) 1950

*Saccharomyces microellipsodes* Osterwalde

7473 ATCC 10605; NRRL (L. J. Wickerham) Strain Y-1550 1951

*Saccharomyces muciparus* Beijerinck

7456 IFO S-64; CBS (Beijerinck) 1950

*Saccharomyces odessa* Schnegg et Oehlkers

7457 IFO S. 65; CBS (Schnegg) 1950

*Saccharomyces oviformis* Osterwalder

7458 IFO S-66; CBS (Osterwalder) 1950

*Saccharomyces tetrasporus* Beijerinck See Saccharomyces mangini var. tetrasporus (Beij.) Dekker

*Saccharomyces Tokyo* Nakazawa

7459 IFO S-43; CRIGF (Nakazawa) 1950

*Saccharomyces torulosus* Osterwalder See A. Chevalieri var. torulosus

*Saccharomyces uvarum* Beijerinck

7460 IFO S-70; CBS (Beijerinck) 1950

*Saccharomyces Willianus* Saccardo

7463 IFO S-48; GIB (Král) 1950

*Saccharomyces Yedo* Nakazawa

7464 IFO S-49; CRIGF (Nakazawa) 1950

*Sachsia suaveolens* Lindner See Cladosporium suaveolens

*Scenedesmus obliquus* (Turp.) Krüger

A003 TIBR (Tamiya) Strain D3; University of Chicago (Gaffron) 1952

*Sphaceloma* glycines Kuribayashi et Kurata

4191 NARI (H. Kurata) 1952

*Spirotrichum purpureum* Saito Tritirachium purpureum (Saito) van Beyma

*Sporidiobolus johnsonii* Nyland

7467 University of California (Nyland) (Lit.: Mycologia *4* (6): 687, 1949) 1951

*Sporobolomyces alborubescens* Derx (Syn. Sporobolomyces photographus (Biourge) Cif. et Red. var. alborubescens (Derx) Verona et Ciferri)

7478 CBSY (Derx). To be incubated at 15–18°C 1951

*Sporobolomyces albus* Hanna See Bullera alba (Hanna) Derx

*Sporobolomyces gracilis* Derx

7479 CBSY (Derx). To be incubated at 15–18°C 1951

*Sporobolomyces miniatus* Yamazaki et Fujii

7465 DACK (Yamazaki) (Lit.: J. Agr. Chem. Soc. Japan *24*, 11–15, 1950 1951

*Sporobolomyces odorus* Derx (Syn. Sporobolomyces photogenus (Biourge)

Cif. et Red. var. odorus (Derx) Verona et Ciferri)
7480 CBSY (Derx). To be incubated at 15–18°C 1951
*Sporobolomyces pararoseus* Olsen et Hammer
7481 CBSY (Hammer) 1951
*Sporobolomyces photographus* (Biourge) Cif. et Red. See Sporobolomyces roseus Kluyver et van Niel
*Sporobolomyces photographus* var. *alborubescens* (Derx) Verona et Ciferri See Sporobolomyces alborubescens Derx
*Sporobolomyces photographus* var. *odorus* (Derx) Verona et Ciferri See Sporobolomyces odorus Derx
*Sporobolomyces pollacccii* Verona et Ciferri
7482 CBSY (Pollacci) 1951
*Sporobolomyces roseus* Kluyver et van Niel (Syn. Sporobolomyces photographus (Biourge) Cif. et Red.)
7483 CBSY (Beijerinck) 1951
*Sporobolomyces rubicundulus* (Okunuki) Verona et Ciferri (Syn. Pseudomonilia rubicundulus Okunuki)
7484 CBSY (Hammer) 1951
*Sporobolomyces salmoneus* Derx (Syn. Sporobolomyces salmonicolor Kluyver et v. Niel var. salmoneus (Derx) Verona et Ciferri)
7485 CBSY (Derx) 1951
*Sporobolomyces salmonicolor* Kluyver et van Niel
7466 DACK (Yamazaki) 1951
7486 CBSY (van Niel) 1951
*Sporobolomyces salmonicolor* var. *salmoneus* (Derx) Vernona et Ciferri See Sporobolomyces salmoneus Derx
*Sporobolomyces salmonicolor* var. *polymyxa* Kluyver et van Niel
7487 CBSY (van Niel) 1951
*Sporobolomyces Shibatanus* (Okunuki) Verona at Ciferri
Syn. *Torula Shibatana* Okunuki
7331 IIPB (Okunuki) xxxx
*Sporobolomyces tenuis* Kluyver et van Niel (Syn. Amphiernia rubra Grüss)
7488 CBSY (Beijerinck) 1951
*Sporobolomyces* sp.
7470 AES (T–419–1) 1951
*Sporotrichum Carougeaui* Langeron (Syn. Candida variabilis (Lindner) Berkhout) (Lit.: Deddens & Lodder (1942) p. 63)
Syn. *Monilia variabilis* Lindner

4077 OUT-174; CLM R-177; GIB (Král) xxxx

*Sporotrichum roseum* Link

4178 NI (Tsubaki) Strain T441-1 1951

*Sporotrichum Schenckii* Matruchot

4212 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

4213 406th MGL (P. Liu) 1952

*Streptomyces alni* (Peklo) Waksman

Syn. *Actinomyces alni* Peklo

9080 CBS (v. Plotho) 1951

*Streptomyces griseus* (Krainski) Bergey et al.

9082 ACTU (Sakai). Strain S-601. Production of streptomycin 1951

*Streptomyces olivaceus* (Waksman) Bergey et al.

9086 NIH (Okami); NRRL Starin B-1125. Submerged aerobic fermentation of vitamin $B_{12}$ 1952

*Streptomyces* sp.

9081 ACTU (Sakai) Strain S66B. Production of chloromycetin 1952

*Thermoascus aurantiacus* Miehe

2068 CBS (Boack) 1951

*Thielavia basicola* (B. et Br.) Tul. See Thielaviopsis basicola

*Thielaviopsis basicola* (B. et Br.) Ferraris

Syn. *Thielavia basicola* (B. et Br.) Tulasne

2040 AES-A36 (Muko). From mouldy sweet potate 1952

*Tilletiopsis cremea* Tsubaki

3113 NI (Tsubaki) T550-11 From leaf of peach, Omori 1952

*Tilletiopsis lilacina* Tsubaki

3114 NI (Tsubaki) T682-2. From leaf of *Cornus controversa*, Meguro, Tokyo 1952

*Tilletiopsis minor* Nyland

3064 University of California (Nyland). (Lit.: Mycologia, *42*, No. 4, p. 488, 1950) 1951

3111 NI (Tsubaki) T565-2. From leaf of *Hibiscus mutabilis*, Mejiro, Tokyo 1952

*Tilletiopsis minor* var. *fava* Tsubaki

3112 NI (Tsubaki) T628-1. From leaf of *Acer*, Koishikawa, Tokyo 1952

*Tilletiopsis washingtonensis* Nyland

3065 Univ. of California (Nyland) (Lit.; Mycologia *42*, No. 4, p. 488, 1950) 1951

*Tolypothrix tenuis* Kützing

A005 BLSU (A. Watanabe) strain W I. Atmospheric nitrogen-fixing blue-green algae from Borneo 1952

*Torula fermentati* Saito See Candida Guilliermondii

*Torula lactosa* Kluyver See Candida pseudotropicalis var. lactosa

*Torula pulcherrima* Lindner See Candida pulcherrima

*Torula Shibatana* Okunuki See Sporobolomyces Shibatanus

*Torulopsis albus* Saito et Oda See Candida japonica Diddens et Lodder

*Torulopsis neoformans* (Sanf.) Red.

Syn. *Cryptococcus neoformans* (Sanfelice) Vuillemin

7496 406th MGL (P. Liu); 3rd Army Area Laboratory; Duke Univ. (Conant) 1952

*Torulopsis pulcherrima* (Lindner) Saccardo See Candida pulcherrima

*Tricholoma aggregatum* (Secretan) Cost. et Dufour (Jap. neme; Daikoku-Shimeji)

3109 NI (Kominami) From Aizu-Wakamatsu 1951

*Tricholoma fumida* Kawamura (Jap. name; Kuroshimeji)

3054 NI (Tsubaki) T413-1 1950

*Trichophyton concentricum* Blanchard

4214 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Trichophyton ferrugineum* (Ota) Langeron et Milochevitch (Microsporon ferrugineum Ota)

4215 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

Syn. *Microsporum japonicum* Dohi et Kambayashi

4156 TUHKB (Takahashi)

*Trichophyton gypseum asteroides* See Trichophyton mentagrophytes

*Trichophyton interdigitale* Priestley See Trichophyton mentagrophytes

*Trichophyton mentagrophytes* (Robin) Blanchard (Microsporon mentagrophytes Robin)

4216 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

4217 406th MGL (P. Liu) 1952

Syn. *Trichophyton gypseum asteroides*

4158 TUHKB (Takahashi) xxxx

Syn. *Trichophyton interdigitale* Priestley

4157 TUHKB (Takahashi) xxxx

4180 KUD 1951

Syn. *Trichophyton pedis* Ota

4174 SMC (Hagiwara) 1950

*Trichophyton pedis* Ota (Ctenomyces pedis (Ota) Langeron et Mil.) See

Trichophyton mentagrophytes

*Trichophyton purpureum* Bang See Trichophyton rubrum

*Trichophyton rubrum* (Cast.) Sabouraud

4218 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

Syn. *Trichophyton purpureum* Bang

4159 TUHKB (Takahashi) xxxx

4181 KUD 1951

*Trichophyton Schoenleini* (Lebert) Langeron et Milochevitch

4219 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Trichophyton tonsurans* Malmsten

4220 406th MGL (P. Liu); 3rd AAL; Duke Univ. (Conant) 1952

*Trichophyton violaceum* Sabouraud

4175 SMC (Hagiwara) 1950

*Trichosporon Beigelii* (Rabenhorst) Vuillemin

7597 406th MGL (P. Liu) 1952

*Trichosporon cutaneum* (de Beurmann, Gougerot et Vaucher) Ota

Syn. *Hemispora rugosa* (A. Cast.) Castellani et Chalmers

4173 IEO Tc. 4; ACTU (Sakaguchi); Ota 1951

Syn. *Parendomyces asteroides* Rischin

7461 IFO Pa. 1; CRIGF (Nakazawa); Ota 1950

Syn. *Parendomyces Balzeri* Gougerot et Burnier

7462 IFO Pa–2; (M. Ota) 1950

*Trichosporon pullulans* (Lindner) Diddens et Lodder

Syn. *Oospora pullulans* (Lindner) Lindau

7593 IFO–Tc. 3 (4603); HHTC (Naganishi); CLMR–204 (Saito); CBS (Lindner) 1952

*Trichosporum* See Trichosporon

*Trichothecium roseum* Link

4196 NI (Tsubaki) 1951

*Tritirachium purpureum* (Saito) v. Beyma

Syn. *Spirotrichum purpureum* Saito

4100 HHTS (Naganishi). From egg of duck xxxx

*Ustilogo anthearum* Fries

3057 BSTU (Iiono); HUA (Enomoto) 1951

*Ustilago Hordei* (Pers.) Kellerman et Swingle

3058 BSTU (Iino) Strain 12A 1951

3059 BSTU (Iino) Strain II–112 1951

*Ustilago nuda* (Jensen) Kellerman et Swingle

3060 BSTU (Iino); HUA (Enomoto) 1951

*Ustilago Shiraiana* P. Hennings

3061 BSTU (Iino); HUA (Enomoto) 1951

*Ustilago tritici* (Pers.) Jensen

3062 BSTU (Iino); HUA (Enomoto) 1951

*Verticillium niveo-stratosum* Lindau

4171 NI (Tsubaki) T. 322–1 1951

*Vibrio purpureus* Kadota

8095 MAKU (Kadota) Agar-destroying marine bacterium (Lit.: Memoir Coll. Agr. Kyoto Univ. *59*, p. 59, 1951) 1951

*Zygorhynchus Vuilleminii* Namyslowski

1253, 1254 & 1255 FES (Kawada) Strains A1–3, A2–1 and A2–2 1952

*Zygosaccharomyces priorianus* Klöcker

7474 ATCC 2061; Univ. of Illinois (F. W. Tanner); CBSY (NRRL Strain Y–53) 1951

## List of Abbreviations Indicating the Source of Cultures

ACTU: Institute of Agricultural Chemistry, Faculty of Agriculture, Tokyo University 東京大學農學部農藝化學教室

AES: Agricultural Experiment Station of the Department of Agriculture, Nishigahara, Tokyo 西ヶ原農事試驗場

ATCC: American Type Culture Collection, Washington, D. C., U. S. A.

BATU: Botanical Institute of Faculty of Agriculture, Tokyo University 東京大學農學部植物學教室

BLSU: Biological Laboratory, Seijo University, Tokyo. 成城大學生物學教室

BSTU: Botanical Institute of Faculty of Science, Tokyo University 東京大學理學部植物學教室

CBS: Centraalbureau voor Schimmelcultures, Baarn, Holland

CBSY: Centraalbureau voor Schimmelcultures, Yeast-Division, (Laboratory of Microbiology), Delft, Holland

CLMS: Central Laboratory, South Manchuria Railway Co., Dairen 南滿洲鐵道株式會社中央試驗所

CRIGF: Central Research Institute of the Government of Formosa, Taihoku 台灣總督府中央研究所

DACK: Department of Agricultural Chemistry, Kyushu University, Fukuoka 九州大學農學部農藝化學教室

FES: National Forest Experiment Station, Meguro, Tokyo 國立林業試驗場
FESIH: Forest Experiment Station of Imperial Household, Asakawa 帝室林野局淺川林業試驗場
HHTS: Hiroshima High Technical School 廣島高等工業學校
HUA: Faculty of Agriculture, Hokkaido University 北海道大學農學部
IFO: Institute of Fermentation, Osaka 財團法人醱酵研究所
IFSK: Institute for Food Science, Kyoto University, Kyoto 京都大學食糧科學研究所
IHM: Institute of Hygiene, Montevideo, Urguay
IIPB: Iwata Institute of Plant Biochemistry, Tokyo 岩田植物生理化學研究所
KUD: Institute of Dermatology, Keio University, Tokyo 慶應大學醫學部皮膚科教室
LSH: London School of Hygiene, London
MAKU: Microbiological Laboratory, Department of Fisheries, Faculty of Agriculture, Kyoto University, Maizuru 京都大學農學部水產科微生物學教室
NARI: National Agricultural Research Institute, Tokyo 國立農業技術研究所
NCA: National Canners' Association, Washington, D.C., U.S.A.
NCTC: The National Collection of Type Culture, London
NHLT: National Hygienic Laboratory, Tokyo 東京衛生試驗所
NI: Nagao Institute, Kitashinagawa, Tokyo 財團法人長尾研究所
NIK: Nagao Institute, Kyoto Branch, Kyoto 長尾研究所京都支所
NIN: National Institute of Nutrition, Tokyo 國立榮養研究所
NRRL: Northern Regional Research Laboratory, Peoria, Illinois, U.S.A.
NSM: National Science Museum, Ueno Park, Tokyo 國立科學博物館
OUT: Facutly of Technology, Osaka University 大阪大學工學部
SES: National Sericultural Experiment Station, Tokyo 國立蠶絲試驗場
SMC: Showa Medical College, Tokyo 昭和醫科大學
TAC: Tokyo Agricultural College, Tokyo 東京農業大學
TCAF: Tottori College of Agriculture and Forestry, Tottori 鳥取高等農林學校
TEU: Tokyo Education University, Tokyo 東京教育大學
TIBR: Tokugawa Institute for Biological Research 德川生物學研究所
TUHKB; Tokyo University Hospital, Koishikawa Branch, Tokyo 東京大學病院小石川分院
UCA: Utsunomiya College of Agriculture, Utsunomiya 宇都宮高等農林學校
USDA: United States Department of Agriculture, Washington, D.C., U.S.A.
3rd AAL: 3rd Army Area Laboratory
406th MGL: 406th Medical General Laboratory, Tokyo

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